Ritual Change at the End of the Maya Classic Period: A Study of Incense Burners from the Southern Lowlands

María Dolores Tobías

BAR International Series 2258
2011

Ritual Change at the End of the Maya Classic Period: A Study of Incense Burners from the Southern Lowlands

María Dolores Tobías

BAR International Series 2258
2011

Published in 2016 by
BAR Publishing, Oxford

BAR International Series 2258

Ritual Change at the End of the Maya Classic Period: A Study of Incense Burners from the Southern Lowlands

© M D Tobías and the Publisher 2011

The author's moral rights under the 1988 UK Copyright,
Designs and Patents Act are hereby expressly asserted.

All rights reserved. No part of this work may be copied, reproduced, stored, sold, distributed, scanned, saved in any form of digital format or transmitted in any form digitally, without the written permission of the Publisher.

ISBN 9781407308296 paperback
ISBN 9781407338149 e-format
DOI https://doi.org/10.30861/9781407308296
A catalogue record for this book is available from the British Library

BAR Publishing is the trading name of British Archaeological Reports (Oxford) Ltd. British Archaeological Reports was first incorporated in 1974 to publish the BAR Series, International and British. In 1992 Hadrian Books Ltd became part of the BAR group. This volume was originally published by Archaeopress in conjunction with British Archaeological Reports (Oxford) Ltd / Hadrian Books Ltd, the Series principal publisher, in 2011. This present volume is published by BAR Publishing, 2016.

BAR

PUBLISHING

BAR titles are available from:

BAR Publishing
122 Banbury Rd, Oxford, OX2 7BP, UK
EMAIL info@barpublishing.com
PHONE +44 (0)1865 310431
FAX +44 (0)1865 316916
www.barpublishing.com

To my parents Gloria E. Negri de Tobías and José W. Tobías,

and to my husband Stefan Salomon

Acknowledgements

This study would not have been possible without the help of many people who offered their support in a number of ways. I would first like to show gratitude to my first supervisor, Dr. Elizabeth Graham, for her enormous support, guidance, and dedication throughout the years. I am grateful for her sound advice, good teaching and good company. It has been a pleasure to work with her. I would also like to thank Prof. Clive Orton, my second supervisor, for his advice and support on various issues, especially those related to the representative ness of the data used in the analyses of incense burners, as well as on the use of Access for my Censers Database. This project was financially supported by the Alban Program of the Asociación Grupo Santander and by my parents without whom it would not have been accomplished. I wish to thank Dr. David Pendergast for our technical discussions about stratigraphy and architecture and for providing me with data of the censers from Lamanai. I would also like to show my gratitude to Dr. Brendan Derham who conducted the chemical analysis of the organic samples associated with incense burners. I am indebted to Dr. Christopher Jones for assisting me in finding information about the contexts of the censers from Tikal and Uolantun during my visit to the University of Pennsylvania. I would also like to thank Lorraine Williams-Beck for showing me the censer material from Acanmul and for warmly hosting me in her house in Campeche during my first season of fieldwork. My friends and colleagues from Guatemala also offered great support and assistance during the completion of this project and to them I am deeply indebted. I would first like to express my gratitude to the authorities of the Instituto de Antropología e Historia of Guatemala for granting me permission to study the ceramic and organic material of the various archaeological projects from Guatemala involved in this study. I owe my deepest gratitude to Dr. Juan Pedro Laporte, Director of the Proyecto Atlas Arqueológico de Guatemala, and to Lilian Corzo, coordinator of the same project, for their care as well as their assistance to study the materials from this and other projects. I would like to thank Juan Pedro for his stimulating discussions about stratigraphy and ceramics and for hosting me in his house while I studied the censer material from the Atlas. Lilian Corzo offered me her friendship, good company, and assistance in introducing me people from other projects, hosted me in Guatemala City, and took care of me when I was ill. To her I am also very grateful. I would like to thank Bernard Hermes, Francisco Estrada-Belli, and Melanie Forné for providing me with information of the censer material excavated at Yaxhá, Holmul, and La Joyanca, respectively. I am also indebted to Gorge Chocón for his drawings of the materials excavated by the Proyecto Atlas Arqueológico de Guatemala. I wish to thank Licenciado Ramos Noj for providing me with information about the modern samples of incense collected for this study and to Gilberto Chayax Huex for our discussions on the use of incense in modern Maya rituals. Beto Tezukun was in charge of the Bodega of Tikal and assisted me while I studied the censers from Tikal and Uolantun. To him I am also very grateful. I would warmly like to thank my friends Celia and Jorge Piña for their care while I was in Guatemala City and for hosting me in their house. It has been a pleasure to spend time with them and their daughters Paula and Patricia. Lastly, and most importantly, I wish to thank my parents who raised me, supported me, taught me, and loved me during all my life. To them and to my husband I dedicate this book.

Abstract

The research aims to better understand Maya ritual practices associated with the burning of aromatic substances and the use of incense burners in the southern Maya lowlands during the Classic (A.D. 250 – 900) to Postclassic (A.D. 900 – A.D. 1200) transition. Incense burners are considered as important components of Maya ritual and religious paraphernalia through which communication with supernatural beings was enacted. Their forms and decoration were the products of specific principles of design and iconography that were commonly imbued with symbolic and religious meaning. The study involves an analysis of the form and decoration of these vessels as well as their contexts of recovery and use through time. The changes and continuities in the forms and decoration of incense burners, their contexts and their use sheds light into the continuation and/or innovation of ritual and religious ideas which are linked to broader social, economic and political factors in Maya society during the end of the Classic period. The study is based on a sample of incense burner materials excavated by the following projects in Guatemala: Proyecto Arqueológico Regional Petexbatun, Proyecto Atlas Arqueológico de Guatemala, Tikal Project, Proyecto Nacional Tikal, Proyecto La Joyanca – Petén Noroccidente, and Proyecto Yaxhá-Nakum-Naranjo. It also involves the study of censer materials recorded at the Museo Nacional de Arqueología y Etnología in Guatemala, the British Museum in the United Kingdom, the Peabody Museum of Harvard University, the Peabody Museum of Natural History of Yale University, and the University of Pennsylvania Museum of Archaeology and Anthropology in the United States of America.

Table of Contents

1. INTRODUCTION......1

2. THE END OF THE CLASSIC PERIOD AND THE TRANSITION TO THE POSTCLASSIC......4

2.1. INTRODUCTION......4

2.2. THE NATURE OF CHANGE......4

2.3. THE PRESENCE OF 'MEXICAN' ELEMENTS IN THE MAYA AREA......6

2.3.1. 'Mexican' elements at Chichen Itza......6

2.3.2. 'Mexican' elements in the Río Usumacinta region......7

2.3.3. 'Mexican' elements in the Guatemala highlands......8

2.4. THE SPREAD OF PAN-MESOAMERICAN SYMBOLS IN MAYA RELIGION......8

2.4.1. The Postclassic Religious Style......8

2.4.2. The spread of a religious style based on Quetzalcoatl/ Kukulcan and Tlaloc......9

2.5. CHANGES AND CONTINUITIES SUGGESTED IN THE RITUAL USE OF INCENSE BURNERS......10

3. RITUAL PRACTICES AND MATERIAL CULTURE......12

3.1. INTRODUCTION......12

3.2. A DEFINITION OF RITUAL......12

3.2.1. Rituals as expressions of experience......13

3.2.2. Ritual theory and transition......13

3.2.3. Ritual transformation enacted......13

3.2.4. Cosmologies as thought and experienced......14

3.3. CENSERS AS MATERIAL CULTURE OF RITUAL PRACTICES......14

3.4. THE USE OF INCENSE IN RITUALS......14

3.4.1. Incense in the Jewish tradition......14

3.4.2. Incense in the Maya area of Mesoamerica......15

3.5. CONCLUSION......17

4. PREVIOUS STUDIES OF CENSERS IN THE MAYA LOWLANDS......18

4.1. THE DESIGN OF THIS STUDY......22

5. THE CENSER SAMPLE: RESEARCH METHODOLOGY......23

5.1. RESEARCH QUESTIONS......23

5.2. THE SAMPLE......23

5.3. THE FIELD RESEARCH 24
5.4. THE TYPES OF ANALYSIS CONDUCTED IN THIS STUDY 25
5.4.1. Formal analysis 25
5.4.2. Contextual analysis 25
5.4.3. Distributional analysis 25
5.5. THE RECORDING OF CENSER MATERIALS 25
5.5.1. The database program 25
5.6. THE SELECTION OF THE CENSER MATERIALS USED IN THE STUDY 27

6. THE CENSERS IN PRIMARY CONTEXTS 29
6.1. LATE CLASSIC PERIOD 29
6.2. TERMINAL CLASSIC PERIOD 39
6.3. LATE CLASSIC AND/OR TERMINAL CLASSIC PERIODS 47
6.4. TERMINAL CLASSIC OR POSTCLASSIC PERIOD 50
6.5. POSTCLASSIC PERIOD 52

7. A TYPOLOGICAL AND DISTRIBUTIONAL ANALYSIS OF CENSERS AND CONTAINERS ASSOCIATED WITH BURNED INNER SURFACES 54
7.1. LADLE CENSERS 55
7.1.1. Description and background 55
7.1.2. Distribution of ladle censers in my sample 56
7.1.3. Structure/context summary 56
7.1.4. Evidence from other sites 57
7.1.5. Conclusion 58
7.2. HOLLOW CYLINDRICAL CENSER STANDS WITH FLANGES AND A CENTRAL MODELLED EFFIGY REPRESENTATION 58
7.2.1. General description and background 58
7.3. TUBULAR CYLINDRICAL STANDS (OR CONTAINERS?) WITH FLANGES, A SOLID BASE, AND A CENTRAL MODELLED EFFIGY REPRESENTATION 62
7.3.1. General description and background 62
7.4. VASES WITH FACE EFFIGY (WITH BURNED INNER SURFACES) 63
7.4.1. Description and background 63
7.4.2. Distribution of vases with face effigies with burned inner surfaces in my sample 64
7.4.3. Structure/context summary 64
7.4.4. Evidence from other sites 64
7.4.5. Conclusion 64
7.5. PEDESTAL-BASED CENSERS 64
7.5.1. General description and background 64
7.6. THREE-PRONGED SUPPORTS (WITH BURNING EVIDENCE IN THEIR BASES) 67
7.6.1. Description and background 67
7.6.2. Distribution of three-pronged supports in my sample 67
7.6.3. Structure/context summary 67
7.6.4. Evidence from other sites 68
7.6.5. Conclusion 68

7.7. CONTAINERS WITH OUTFLARED WALLS (WITH BURNING EVIDENCE IN THEIR INNER SURFACES) 68

7.7.1. Description and background 69

7.7.2. Distribution of containers with outflared walls and burned inner surfaces in my sample 69

7.7.3. Structure/context summary 69

7.7.4. Evidence from other sites 69

7.7.5. Conclusion 69

7.8. VESSELS WITH HIGH WALLS AND EVERTED RIMS (WITH BURNING EVIDENCE IN THEIR INNER SURFACES) 69

7.8.1. Description and background 70

7.8.2. Distribution of vessels with high walls and everted rims in my sample 70

7.8.3. Structure/context summary 70

7.8.4. Evidence from other sites 70

7.8.5. Conclusion 70

7.9. SPIKED BUCKET-LIKE VESSELS WITH FLARED WALLS (WITH AND WITHOUT BURNING EVIDENCE IN THEIR INNER SURFACES) 70

7.9.1. Description and background 71

7.9.2. Distribution of spiked bucket-like vessels in my sample 71

7.9.3. Structure/context summary 71

7.9.4. Evidence from other sites 71

7.9.5. Conclusion 71

7.10 SEATED-EFFIGY COVERS 71

7.10.1. Description and background 71

7.10.2. Distribution of seated-effigy covers in my sample 73

7.10.3. Structure/context summary 73

7.10.4. Evidence from other sites 74

7.10.5. Conclusion 74

8. THE TRANSITION FROM THE CLASSIC TO POSTCLASSIC PERIOD BASED ON A CONTEXTUAL AND DIACHRONICAL ANALYSIS OF INCENSE BURNERS 82

8.1. INTRODUCTION 82

8.2. SUMMARY OF SOME RESULTS AND INTERPRETATIONS OF THE CONTEXTUAL AND DISTRIBUTIONAL ANALYSIS OF CENSERS OR CENSER PARTS PRESENTED IN CHAPTERS 6 AND 7 82

8.2.1. Ladle censers 82

8.2.2. Hollow cylindrical stands with flanges and the Jaguar/Sun representation 83

8.2.3. Seated-effigy covers 84

8.2.4. Flanged zoomorphic pedestal-based censers 85

8.2.5. Spiked pedestal-based censers 85

8.3. THE USE OF INCENSE BURNERS AND THE LATE CLASSIC TO POSTCLASSIC TRANSITION 86

8.4. FOREIGN INFLUENCES IN THE USE OF CENSERS IN THE MAYA AREA AND THE LATE CLASSIC TO POSTCLASSIC TRANSITION 88

8.4.1. Other materials from my sample possibly used to burn incense similar to specimens identified in the Guatemala highlands and other parts of Mesoamerica 89

8.5. CONCLUSION 90

9. INCENSE BURNING PATTERNS AND CENSERS........91
9.1. INTRODUCTION........91
9.2. INCENSE BURNING PATTERNS OBTAINED THROUGH EXPERIMENTAL WORK........91
9.2.1. Burning pattern A........91
9.2.2. Burning Pattern B........92
9.2.3. Burning Pattern C........92
9.3. THE USE OF CENSERS BASED ON A STUDY OF THE MATERIALS RECORDED DURING FIELDWORK........93
9.3.1. Ladle censers........93
9.3.2. Hollow and tubular cylindrical stands with flanges and a central modelled effigy representation........95
9.3.3. Tubular cylindrical stands with flanges, a solid base, and the Jaguar/Sun representation (very likely to have been used as incense burners)........96
9.3.4. Vases with face effigy (possibly used as incense burners)........96
9.3.5. Pedestal-based censers........98
9.3.6. Three-pronged supports (possibly used as incense burners)........101
9.3.7. Spiked bucket-shaped vessels with flared walls (with burned inner surfaces)........102
9.3.8. Seated-effigy covers........102
9.3.9. Containers with outflared walls (possibly used as incense burners)........102
9.3.10. Vessels with high walls and an everted rim (possibly used as braziers)........103
9.4. CONCLUSION........104

10. THE KINDS OF INCENSE USED IN THE MAYA AREA AND CENTRAL MEXICO........107
10.1. INTRODUCTION........107
10.2. MODERN SAMPLES OF INCENSE FROM THE MAYA AREA AND CENTRAL MEXICO........107
10.2.1. Incense collected from the markets of Santa Elena, La Antigua, and Pino Suárez........108
10.2.2. A comparison of the samples from the markets of Santa Elena, La Antigua, and Pino Suárez with samples from a market in Tepoztlan, Morelos, in Central Mexico........113
10.3. THE USE OF POM AND COPALLI........114
10.3.1. The use of pom and Copalli in Modern times........114
10.3.2. The use of pom and copalli in Colonial times........116
10.4. THE USE OF RUBBER AS INCENSE........117
10.5. THE USE OF XPUHUC AS INCENSE........118
10.6. THE USE OF BEESWAX AND HONEY AS INCENSE........118
10.6.1. The modern use of beeswax as incense........118
10.6.2. The colonial use of beeswax/honey as incense........119
10.6.3. Beeswax and/or honey in the Madrid codex........120
10.6.4. Archaeological evidence of the use of beeswax/honey as incense........120
10.7. ARCHAEOLOGICAL SPECIMENS OF INCENSE FROM THE MAYA LOWLANDS AND CENTRAL MEXICO........122
10.7.1. Archaeological specimens from the Maya lowlands........122
10.7.2. Archaeological specimens from Central Mexico........125

10.7.3. Other possible forms of incense represented in Mesoamerican codices 126
10.7.4. A comparison of archaeological incense from the Maya lowlands and Central Mexico 128
10.8. CONCLUSIONS 129

11. DISCUSSION AND CONCLUSIONS 133
11.1. FORM AND FUNCTION 133
11.2. CENSERS AND INCENSE BURNING 133
11.3. CONTEXT AND DISTRIBUTION 134
11.3.1. Censers associated with temples and shrines 134
11.3.2. Censers associated with residences 135
11.3.3. Censer types found in diverse contexts and widely used 135
11.3.4. Censers in epicentral vs. peripheral areas of sites 135
11.3.5. Private vs. public use of the censers 136
11.4. WHAT THIS STUDY OF CENSERS SUGGESTS ABOUT THE MAYA 'COLLAPSE' 136

12. APPENDIX 138
12.1. SECTION A 138
12.1.1. Terminology 138
12.2. SECTION B 139
12.2.1. List of tables used in the database 139
12.3. SECTION C 140
12.3.1. Examples of tables included in the Censers Database 140
12.3.2. The design of the Censers Database 143
12.4. SECTION D 144
12.4.1. Late Classic Period 145
12.4.2. Terminal Classic Period 150
12.4.3. Late Classic and/or Terminal Classic Periods 154
12.4.4. Terminal Classic or Postclassic Period 154
12.4.5. Postclassic Period 155
12.5. SECTION E 155
12.5.1. The application of chemical analysis to residues recovered from Mayan incense burners and associated contexts 155

13. REFERENCES 170

List of Figures

Figure 1 Map of the Maya area 2

Figure 2 Vases with an effigy face from Structure M7-34, Aguateca, excavated by the Proyecto Aguateca (a) vase 310050 (b) vase 310385 30

Figure 3 Censer fragment found in the antechamber of Structure M8-17, Aguateca, excavated by the Proyecto Aguateca 30

Figure 4 Censer fragments from Structure P5-7, Dos Pilas, excavated by the Proyecto Arqueológico Regional Petexbatun 31

Figure 5 Censer fragments from Structure P5-7, Dos Pilas, excavated by the Proyecto Arqueológico Regional Petexbatun 31

Figure 6 Censer material from Structure K4-2, Dos Pilas, excavated by the Proyecto Arqueológico Regional Petexbatun (a and b) hollow cylindrical stand with flanges and what is likely a Jaguar/Sun representation (614924 n.2) 32

Figure 7 Censer material from Structure K4-2, Dos Pilas, excavated by the Proyecto Arqueológico Regional Petexbatun (a) various censer fragments (614924 n.2) (b) fragment (614973 n.1) (c) container with outflared walls (614960 n.1)....................32

Figure 8 Hollow cylindrical stand with flanges and what is likely a Jaguar/Sun representation (PNT 020) found in a frontal niche in the frontal stairs of Structure 6C-50-2, Mundo Perdido, Tikal, excavated by the Proyecto Nacional Tikal..................33

Figure 9 Spiked bucket-like vessel (A-326) from Burial 244 in the East Structure of Group 10-B, Ixkun, excavated by the Proyecto Atlas Arqueológico de Guatemala 33

Figure 10 (a) Spiked bucket-like vessels PN 41D-16-2 421A and PN 41D-16-2 421B from bench niche in Structure C-12, Piedras Negras (photos: author, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala (b) reconstruction of ‘chalice’ vessel from room corner 34

Figure 11 Offering PTV-2 located in the core of the platform of Structure 5D-5 (Temple 5), Tikal, excavated by the Proyecto Templo V (a) hollow cylindrical stands with flanges and the Jaguar/Sun representation (b) seated-effigy covers.............35

Figure 12 Deposit of incense burners found in excavation through Unit 1 in Structure 5D-32-1st, Tikal, excavated by the Tikal Project (a) seated-effigy cover 12U-82a/16 (b) flanged zoomorphic pedestal-based censer with base 12U-82b/16 (c) hollow cylindrical stand with flanges and what is likely a Jaguar/Sun representation 12U-84a/16 36

Figure 13 Deposit of incense burners found in excavation through Unit 1 (bench) in structure 5D-32-1st, Tikal, excavated by the Tikal Project (a) hollow cylindrical stand with flanges and what is likely a Jaguar/Sun representation 12U-84b/16 (b) spiked pedestal-based censer 12U-85/16 (c) spiked hollow cylindrical stand 12U-86a/16 (d) spiked hollow cylindrical stand 12U-86b/16 37

Figure 14 Censer material from Structure 5D-33-2nd, Tikal, excavated by the Tikal Project (a) hollow flanged pedestal-based censer (?) 12K-130/10, 15 (b) seated-effigy cover 12K-396/4, 15, 17 (c) seated-effigy cover 12K-131/10 as written on the object but recorded by Ferree in her list of figures as 12K-131/15 38

Figure 15 Ladle censer 5D-5-25-9B and vessel with high walls and everted rim 5D-5-25A, Burial 2, Structure 5D-5 (Temple V), Tikal, excavated by the Proyecto Templo V 39

Figure 16 Container with outflared walls 306882 DPA 159 from Structure M8-10, Aguateca, excavated by the Proyecto Aguateca (photos: author, with permission of the Museo de Arqueología y Etnología de Guatemala)..39

Figure 17 Flanged zoomorphic pedestal-based censer 87-24 from Cache 23, Mound 24, Altar de Sacrificios, excavated by Harvard University 40

Figure 18 Ladle censer 87-25 from Cache 23 in Mound 24, Altar de Sacrificios, excavated by Harvard University 40

Figure 19 Censer fragments PSPI 174, 176, 173, 177, and 175, respectively and from left to right, from Escondite 29 in Structure 2, Sector A, Suk Che' 9, excavated by the Proyecto Atlas Arqueológico de Guatemala 40

Figure 20 Flange fragment PSPI 73 from Escondite 12 in Structure 30, Ixtonton, excavated by the Proyecto Atlas Arqueológico de Guatemala 41

Figure 21 Material from Escondite 84, El Reinado, excavated by the Proyecto Atlas Arqueológico de Guatemala (a) ladle censer PSPI 503 (b) ladle handle PSPI 502 (c) ladle handle PSPI 663 (d) ladle censer (e and f) censer fragments (g) figurine heads 42

Figure 22 Material found in Chamber 12 (E) in the cave of Aktun Ak'Ab, excavated by the Proyecto Atlas Arqueológico de Guatemala (a) ladle censer container PSPI 22 (b) ladle censer PSPI 23 (c) small container with outflared walls PSPI 24.......43

Figure 23 Fragment of seated-effigy cover 135A-605/44; 135A-322/27 from Structure SE-486, Uolantun, excavated by the Tikal Project.................................43

Figure 24 Censer material from Structure SE-486, Uolantun, excavated by the Tikal Project (a) fragments of seated-effigy cover 135A-605/44; 135A-322/27 (b) fragment of seated-effigy cover 135A-629/27, 67, 88 (c) effigy fragment 135A-352/44 and 135A/88 (d) censer stand 135A/44; -618/19 44

Figure 25 Censer material from Structure SE-486, Uolantun, excavated by the Tikal Project (a) censer effigy mask 135A-597/27; -287/16, 7; -297/88 (b) decorative fragment 135A-319/88 (c) effigy fragment 135A-613/44 (d) censer effigy mask 135A-608/44; -587/67 which was part of a flanged hollow cylinder as shown by Ferree (1972: Fig. 18b)...44

Figure 26 Censer material from Structure SE-486, excavated by the Tikal Project (a) fragments from hollow cylindrical stand with flanges and a possible human representation 135A-598/44 (b) censer fragment 135A-324/88.....................................45

Figure 27 Censer fragments from Structure SE-486, Uolantun, excavated by the Tikal Project (a) effigy headdress recorded by Ferree as 135A-560/24 but 135A/44 and 3; 135A-661/88 PD193; 135A-662/27; 135A-662/95 PD202 as written on the headdress's fragments (b) hollow cylindrical stand with flanges and an effigy representation 135A-711/95 and 135A-595/27, and (c) fragment of a seated-effigy cover 135A-651/95 PD 202 and 135A-321/19 PD 191 45

Figure 28 Material from Escondite 18, Ixtonton, excavated by the Proyecto Atlas Arqueológico de Guatemala (a) vessel with high outflared walls and triangular perforations A 312 (b) vessel with high walls and an everted rim A 313 46

Figure 29 Ladle censer from Operation 121, Lot 568, Structure 6E-12, La Joyanca, excavated by the Proyecto Petén-Noroccidente La Joyanca 46

Figure 30 Censer material from Structure 6E-6, La Joyanca, excavated by the Proyecto Petén-Noroccidente La Joyanca in operation 122 (a) censer fragments from lot 1165 (b) censer fragments from lot 1188 (c) censer fragments from lot 1195 48

Figure 31 Censer material from operation 122, lots 1142 and 1165, Structure 6E-6, La Joyanca, excavated by the Proyecto Petén-Noroccidente La Joyanca (a) Hollow cylindrical stand with standing human effigy (b and c) censer fragments 48

Figure 32 Censer material from Structure 6E-6, La Joyanca, excavated by the Proyecto Petén-Noroccidente La Joyanca (a) effigy specimen with flanges from operation 122, lots 1142 and 1165 (b) effigy fragment from Operation 122, lot 1168 (c) fragment of effigy vessel with base also found in temple's room.............................49

Figure 33 Censer fragments from Structure 7F-30, Group 7F-1, Tikal, excavated by the Tikal Project (a) hollow cylindrical stand with flanges and what is likely a Jaguar/Sun representation 3A-88/6, 9 (b) 3B-37b/5 and 3A-97/6 (c) censer effigy mask 3B-37a/5..49

Figure 34 Vessels from Element 2712, Structure 6E-1, La Joyanca, excavated by the Proyecto Petén-Noroccidente La Joyanca 50

Figure 35 Vessels and other materials from Element 2712, Structure 6E-1, La Joyanca, excavated by the Proyecto Petén-Noroccidente La Joyanca 51

Figure 36 Further material from Element 2712, Structure 6E-1, La Joyanca, excavated by the Proyecto Petén-Noroccidente La Joyanca 52

Figure 37 Censer material from Escondite 70, Ucanal, excavated by the Proyecto Atlas Arqueológico de Guatemala (a) ladle censer A-324 and (b) censer fragments 53

Figure 38 Censer PSPI 23, Proyecto Atlas Arqueológico de Guatemala.............................55

Figure 39 Censer from offering PTV-2, Proyecto Templo V 59

Figure 40 Censer Am938, 1021.312...63

Figure 41 Vase 310050, Proyecto Aguateca...63

Figure 42 Censer 12U-82b/16, Tikal Project 64

Figure 43 Censer 12U-85/16...65

Figure 44 Censer fragment PSPI 442, Proyecto Atlas Arqueológico de Guatemala.............67

Figure 45 Vessel PSPI 024, Proyecto Atlas Arqueológico de Guatemala............................68

Figure 46 Vessel A 313, Proyecto Atlas Arqueológico de Guatemala..................................69

Figure 47 Vessel A 326, Proyecto Atlas Arqueológico de Guatemala..................................70

Figure 48 Seated-effigy cover from offering PTV-2, Proyecto Templo V...........................71

Figure 49 Ladle censer from Machaquila 74

Figure 50 Preclassic censers recovered by the Rescate Arqueológico at the island of Flores, Peten, IDAEH-AEROLUX-PRIAMPEG from unit VII-2a...........................74

Figure 51 (a) Early Classic censer stands A-459 and A-460 from Structure EII, Uaxactun (photo: courtesy of Juan Pedro Laporte) (b) Early Classic censer stands MNAE 7887A and 7887B from Structure E-VII, Uaxactun (photos: author, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala) (c) Early Classic censer stand A-325 from the northern structure of the East Group at Sacul, excavated by the Proyecto Atlas Arqueológico de Guatemala 75

Figure 52 (a) Censer stand (element 2/93) with the central mask representation of GIII, Temple of the Foliated Cross, Palenque (b) censer stand (element 2/97) with the central mask representation of GI, Temple of the Cross, Palenque (c) censer stand (element 3/93) with the central mask of a human portrait, Temple XV-A, Palenque...76

Figure 53 Censer stands from Limones, donation to the Proyecto Atlas Arqueológico de Guatemala (a) censer stand A 314 with the representation of a human portrait (b) fragment of censer stand PSPI 27A with a human portrait representation 76

Figure 54 Censer stand of a human portrait with cruller from Palenque 77

Figure 55 Hollow tubular cylindrical censer stand with flanges and a central modelled seated figure representation ANT. 022009, unknown provenience 77

Figure 56 (a) censer stand MN8858 from Structure A-I, Altar de Sacrificios (b) censer stand PSPI 320 from Structure 3 at the 'Carmen X' Group, Calzada Mopan, excavated by the Proyecto Atlas Arqueológico de Guatemala 77

Figure 57 Censers from Hatzcap Ceel, southern Cayo District, Belize 77

Figure 58 Tubular cylindrical stands with flanges, a solid base, and the Jaguar/Sun representation (photos: author, with permission of the British Museum (a) censer Am1938.1021.312 (b) censer Am1997.Q.855...78

Figure 59 (a) censer from Structure B19, Caracol (b) censer from residential group at Caracol...78

Figure 60 Vases with face effigies (a) vase PSPI 432 from Problematical Deposit 5, Plaza B, Ix Ek', excavated by the Proyecto Atlas Arqueológico de Guatemala (b) effigy vase 77-1 from Mound 14, Altar de Sacrificios, excavated by Harvard University; c) effigy vase from Tabasco held at the Museo Nacional de Antropología, Mexico 79

Figure 61 Flanged zoomorphic pedestal-based censer from Structure IV B located in the Main Plaza of Calakmul, excavated by the Proyecto Arqueológico Calakmul 79

Figure 62 Three-pronged supports from Calzada Mopan, excavated by the Proyecto Atlas Arqueológico de Guatemala (a) specimen PSPI 297, Calzada Mopan (b and c) specimens PSPI 442 and PSPI 443, from the main structure of Group 1, Calzada Mopan 79

Figure 63 Container with outflared walls PN-24A-4-4 from Burial 30 in Structure O-21, Piedras Negras 80

Figure 64 Vessel 12C-599 from the interior room and backdirt down the face of Structure 5D-34, Tikal, excavated by the Tikal Project 80

Figure 65 Spiked flaring bowl from Holmul LT13.01.02, Structure 2, Court A, Group III, Holmul...80

Figure 66 Seated-effigy cover fragment 12K-197/34 from Structure 5D-33, Tikal, Tikal Project..80

Figure 67 Burial N10-4/5, Lamanai, Buk Phase (a) pedestal-based vessel 71/5, not demonstrably a censer but the form suggests its use as an incense burner (b) ladle censer 71/6...81

Figure 68 Hunchback Tomb, Late Postclassic (probably early 16th century) (a) ladle censer 774/10 (b) ladle censer 774/4 (c) ladle censer 774/5 81

Figure 69 Fragments with incised lines likely from roof covering pedestal recovered by the Proyecto Atlas Arqueológico de Guatemala (a) PSPI 437 (b) PSPI 215 89

Figure 70 Specimen from San Cristóbal Totonicapán (Catalogue Number 6252) similar to 'lantern censers' (the lower surface of the roof has incised lines)..................89

Figure 71 (a) PSPI 379, Calzada Mopan, Proyecto Atlas Arqueológico de Guatemala (b) bocon covers from Lake Amatitlán...90

Figure 72 Modern censer obtained in the market of Santa Elena, Peten, showing the marks of burned resin dripping down on the walls of the vessel..............................91

Figure 73 Censer 17.1.1.1385 of unknown provenience stored at the bodega of Tikal, with traces of burned resin that has dripped down the walls of the vessel.....................91

Figure 74 Experiment of incense burning in a modern vessel bought in the market of Santa Elena yielding a pattern of blackened inner walls and a less pronounced circumferential burning area on its inner base..92

Figure 75 Experiment of incense burning with a modern censer from the market of Santa Elena yielding a pattern of a circumferential unburned area on the inner base of the vessel and burned or blackened inner walls above the upper surface of the resin 92

Figure 76 Experiment involving the burning of copal balls with ocote wood in a vessel from the market of Santa Elena yielding a pattern of black stains on the inner base of the vessel, a burned area around the inner edge of the vessel, and black circumferential lines along the inner walls of the vessel 93

Figure 77 Examples of burning patterns of black stains on the inner surfaces of the containers of ladle censers. The vessels do not appear to have resin residues (a) censer A-324, Ucanal (b) censer PSPI 503, El Reinado (c) censer from Operation 121, lot 568, La Joyanca (d) censer 12H-31/15, 8, 7, Tikal (e) censer 31C-3c/3, Tikal (f) censer PSPI 23, Aktun Ak'Ab..94

Figure 78 Red on Brown (*Rojo sobre café, sin nombre formal*). Tollan phase (circa A.D. 900/950-1200)..95

Figure 79 Hollow cylindrical censer stands with an effigy representation with burning traces on the upper edge of the cylinders (a) A314, Simones, Proyecto Atlas Arqueológico de Guatemala (b) NA 11235, Chama, University of Pennsylvania Museum of Archaeology and Ethnology 96

Figure 80 Effigy mask 135A-608/44 and 135A-587/44 of a hollow cylindrical censer stand with flanges and a central modelled effigy representation with burned residues on the back of its mouth 96

Figure 81 Censer Am1997, Q855..97

Figure 82 (a) vessel 310385 from Aguateca, Proyecto Aguateca (b) vessel 310050 from Aguateca, Proyecto Aguateca (c) vessel 77-1 from Altar de Sacrificios, excavated by Harvard University (photos a, b, and c: author, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala) (d) vessel PSPI 432 from Ix Ek', Proyecto Atlas Arqueológico de Guatemala 97

Figure 83 (a) vessel A 318 from Maringa 2, Proyecto Atlas Arqueológico de Guatemala (b) vessel from Caracol, Caracol Archaeological Project..98

Figure 84 Modern Maya incense burners exhibited in the Museo Nacional de Arqueología y Etnología de Guatemala 99

Figure 85 Pedestal-based censers with burning pattern B (a) Lacandon incense burner A-322 from the Xaan area assigned to the Historic period, Proyecto Atlas Arqueológico de Guatemala (b) Lacandon incense burner A 321 from the Xaan area assigned to the Historic period, Proyecto Atlas Arqueológico de Guatemala (c) incense burner TPMC-81 from Topoxte dated to the Middle Postclassic period, Proyecto Triángulo Yaxhá-Nakum-Naranjo (d) pedestal-based censer 553 from La Joyanca, unknown date, Proyecto Petén-Noroccidente La Joyanca..99

Figure 86 Postclassic pedestal-based censers and censer fragments with a pattern of circular lines on their inner walls (a) censer TPMC-076 from Topoxte, Proyecto Yaxhá-Nakum-Naranjo (b) censer TPMC-073 from Topoxte, Proyecto Yaxhá-Nakum-Naranjo (c) censer Am1997, Q.937, unknown provenience, British Museum (d) censer 11445, University of Pennsylvania Museum of Archaeology and Ethnology 99

Figure 87 Censers with black burning traces in their inner bases and walls (a) censer PSPI 296 from Group 119, Calzada Mopan, Proyecto Atlas Arqueológico de Guatemala (b) censer 87-24 from Altar de Sacrificios excavated by Harvard University 100

Figure 88 Censer PTMC-079 (a and b) inner surface of container (c) inner surface of pedestal base..100

Figure 89 Censer 17.1.1.1434 of unknown provenience held at the bodega of Tikal with missing base section adjacent to the vessel's round perforation 101

Figure 90 Pedestal-based censer with a human standing effigy (TPMC-079) from Topoxte with burned residues on the lower lip of its mouth..101

Figure 91 Three-pronged support PSPI 297, Proyecto Atlas Arqueológico de Guatemala 101

Figure 92 Three-pronged support used to burn incense..102

Figure 93 Vessels PN 41D-16-2 421A and PN 41D-16-2 421B, Piedras Negras, Proyecto Piedras Negras..102

Figure 94 Seated-effigy cover 12K-131/15 excavated by the Tikal Project 102

Figure 95 Seated-effigy cover fragments from Uolantun with burned textile traces adhered to their surfaces (a) effigy headdress recorded by Ferree as 135A-560/24 (-328) but 135A/44 and 3; 135A-661/88 PD193; 135A-662/27; 135A-662/95 PD202 as written on the headdress's fragments (b) seated-effigy cover fragment 135A-605/44; 135A-322/27 103

Figure 96 (a) vessel PN-24A-4-4, Piedras Negras, Proyecto Piedras Negras (b) Element 2712-1, 2, 3, 4, La Joyanca, Proyecto Petén-Noroccidente La Joyanca 104

Figure 97 (a) vessel 306882, Aguateca, Proyecto Arqueológico Regional Petexbatun (b) vessel 614960 Dos Pilas, Proyecto Arqueológico Regional Petexbatun 105

Figure 98 (a) vessel 5D-5-25-9A from Burial PTV-2 in Structure 5D-5 (Temple V), Tikal, Proyecto Templo V (b) vessel 12C-599 from the interior room and backdirt down the face of Structure 5D-34, Tikal, Tikal Project (c) vessel A 313 from Escondite 18, Ixtonton, Proyecto Atlas Arqueológico de Guatemala 105

Figure 99 Cache N10-17/8, Lamanai, Terminal Classic/Early Postclassic (a) vessel 578/4 with signs of use as a censer and (b) censer 578/7 105

Figure 100 Modern incense from the Market of Santa Elena, Petén, Guatemala (a) *incienso en grano* (b) *copal bolita negro* (c) *bolas de copal* (d) *cuilco* (e) *ensarte* (f) *unidentified sample* 108

Figure 101 Modern incense from the Market of Santa Elena, Petén, Guatemala (a) *mirra* (b) *mirra* (c) *copal blanco, hojas de guineo, pom* (d) *unidentified cristaline yellowish incense* (e) *ocote* 109

Figure 102 Modern incense from the Market of La Antigua (a) *incienso lágrima puro* (b) *incienso cristalino para aromatizar* (c) *estoraque* (d) *cascarudo* (e) *mirra* (f) *romero* 110

Figure 103 *Ocote* from the Market of La Antigua, Guatemala 110

Figure 104 Modern incense and a piedra lumbre from the Market of Pino Suárez, Villahermosa, Tabasco, Mexico (a) *esencio del ambar* (b) *mirra* (c) *estoraque* (d) *copal blanco* (e) *piedra lumbre* 111

Figure 105 Modern incense from markets in Tepoztlán, Central Mexico, collected during 2004-2005 (a) *copal blanco* (b) *copal lágrima* (c) *copal mirra* (d) *copal incienso* (e) *copal negro* (f) *copal piedra* 114

Figure 106 Possible representations of a spiral motif in fragments of flanges of incense burners from Yaxhá 117

Figure 107 Don Beto Tezukun in the Bodega of Tikal holding a lighted dried beehive fragment 119

Figure 108 Codex Tro-Cortesianus (Madrid Codex) 121

Figure 109 Tro-Cortesianus (Madrid Codex) 121

Figure 110 Censer with effigy representation carrying possible resin and/or wax from beehive. To the sides of the vessel are representations of beehive logs 121

Figure 111 Fragments of yellowish resinous material together with a hand compressed ball of the same material and part of another ball made of a black material (unlabeled material from the Tikal Project excavations) 122

Figure 112 Incense recovered from the Cenote of Sacrifice in Chichen Itza (a) figure 07-7-20/C4654 (b) square-shaped specimen with nodules on top 07-728/C4655 (c) incense specimen with nodules on top 07-7-20 /C4634 (d) 07-7-20/C4531 (e and f) 07-7-20/C4625 (g and h) incense found inside yellowish resin in tripod vessel 07-7-20//C4663 123

Figure 113 Incense recovered from the Cenote of Sacrifice in Chichen Itza Itza (a and b) 07-7-20/C4577 (c) 07-7-20/C4663 (d) 07-7-20/C4609 (e) 07-7-20/C4553 (f) 07-7-20/C4541 (g) 07-7-20/C4547 (h) 07-7-20/C4544 123

Figure 114 Postclassic blue painted copal balls from cache 37 under the front of the step to Room 2 and close to a burial pit in Structure 5D-1-1st, Tikal 124

Figure 115 Incense from Cave Uchentzub in the Cayo District of Belize 124
Figure 116 Incense from Structure 216-1 located in the east side of the East Acropolis of Yaxhá 124
Figure 117 Incense cones recovered from a crater lake in the Nevado de Toluca 125
Figure 118 (a) Bar of copal blanco (white copal), unknown provenience, Museo del Templo Mayor (b) sphere of copal de goma (gum copal), Ofrenda X, Museo del Templo Mayor 125
Figure 119 Late Postclassic effigy pedestal-based censer from Tlatelolco with spheres of copal de goma alternated with corn cobs 126
Figure 120 Representations of incense being placed on ladle censers (a) Codex Selden page 14 (b) Codex Selden page 9 126
Figure 121 Possible representation of incense in the form of a flower perhaps on an incense burner from Codex Bodley 12-iv 127
Figure 122 Representations of liquidambar (a) Mendoza Codex folio 46r (b) Mendoza Codex folio 51r 127
Figure 123 Incense represented in the Dresden codex possibly associated with torches (a) with the representation of a flower in page 49 of the codex (b) with the representation of a pom glyph in page 48 127
Figure 124 Incense represented in the Matrícula de Tributos of the Mendoza Codex 129

Appendix

Figure 1 GC results samples 1-10 162
Figure 2 GC results samples 11-20 162
Very weak samples; S3, 7, 12, 14, 15 162
Figure 3 GC results samples A1-A7 163
Figure 4 GC results samples B1-B8 163
Figure 5 GC results samples C1-C4, D, E 163

List of Tables

Table 1 Different kinds of censers as classified in this study 19

Table 2 Different kinds of censers as classified in this study 20

Table 3 Archaeological projects in Guatemala under which the studied collections were excavated and sites where the censer material was recovered 24

Table 4 General chronologies of sites (table: courtesy of Juan Pedro Laporte, Proyecto Atlas Arqueológico de Guatemala) 27

Table 5 Distribution of ladle censers 56

Table 6 Distribution of hollow cylindrical stands with flanges and what is likely a Jaguar/Sun representation 60

Table 7 Distribution of hollow cylindrical stands with flanges, a solid base, and the Jaguar/Sun representation 63

Table 8 Distribution of vases with face effigies possibly used as censers 64

Table 9 Distribution of flanged zoomorphic pedestal-based containers 65

Table 10 Distribution of spiked pedestal-based censers 66

Table 11 Distribution of three-pronged supports 68

Table 12 Distribution of containers with outflared walls 69

Table 13 Distribution of vessels with high walls and an everted rim 70

Table 14 Distribution of spiked bucket-like vessels 71

Table 15 Distribution of seated-effigy covers. Lot information from Structure SE-486 at Uolantun is quoted from lot cards written by Dennis Puleston and kept at the University of Pennsylvania 72

Table 16 In situ association of ladle censers and other ceramic categories 83

Table 17 In situ association of hollow cylindrical stands with flanges and the Jaguar/Sun representation with other ceramic categories 84

Table 18 In situ associations of seated-effigy covers with other ceramic categories 85

Table 19 In situ associations of flanged zoomorphic pedestal-based censers with other ceramic categories 86

Table 20 In situ associations of spiked pedestal-based censers with other ceramic categories 86

Table 21 Modern names of incense collected in markets of the Maya lowlands and Central Mexico 130

Table 22 Incense from the Maya lowlands and Central Mexico as referenced in colonial documents 131

Table 23 Archaeological incense from the Maya lowlands and Central Mexico dated to the Postclassic period 132

Appendix

Table 24 Main table of the Censers Database 140

Table 25 Table used to record the chronologies given to the censer material 141

Table 26 Table used to record contextual information of the censer material 141

Table 27 Table used to record information about the sites where the censer material was recorded 141

Table 28 Table for the general category of ladle censers with the fields and values given to its fields 141

Table 29 Decoration table of ladle censers with the fields and values given to its fields 142

Table 30 Burning evidence table for ladle censers with the fields and values given to its fields 142

Table 31 Manufacture table of ladle censers with the fields and values given to its fields 142

Appendix (cont.)

Table 1 Sample details 158

Table 2 Modern sample of 'copal blanco, hojas de guineo, Pom', Market of Santa Elena, Figure 101c 164

Table 3 Modern sample of 'incienso lágrima/puro', Market of La Antigua, Figure 102a 164

Table 4 Sample labelled as 'organic material from inside Vessel 2, also jade, marine material and bitumen', vessel 2, Cache 197, Structure 5D-46, Tikal 165

Table 5 Sample labelled as 'copal?', Structure 5D-1 (Temple I), Tikal 165

Table 6 Sample labelled as 'inorganic and organic material', Structure 5D-33, Burial 48, Tikal 165

Table 7 Sample labelled as 'copal', Structure SE-486, Uolantun 166

Table 8 Sample of resin adhered to pedestal-based censer 4A-23, Structure 5D-1 (Temple I), Tikal 166

Table 9 Sample of burned residue from censer sherd with incised lines (PSPI 437), North Structure, Centro Ritual Público, Calzada Mopan, Figure 69a 167

Table 10 Sample from black ball inside resin figure, Structure 216-1, east side of Acropolis, Yaxhá, Figure 116b 167

Table 11 Sample from the yellowish resin of figure with Pom motif on its base, Structure 216-1, East Acropolis, Yaxhá 167

Table 12 Sample of yellow resin from incense figure, Structure 216-1, East Acropolis, Yaxhá, Figure 116b 168

Table 13 Sample of resin adhered to pedestal-based censer TPMC-073, Structure E-2, Main Plaza, Topoxte, Figure 86b 168

Table 14 Sample of resin adhered to pedestal-based censer with human standing effigy TPMC-079, Structure E-2, Main Plaza, Topoxte, Figure 90 169

1. INTRODUCTION

The purpose of my research is to shed light on Maya ritual practices associated with the burning of aromatic substances and the use of incense burners in the central and southern Maya lowlands during the Classic (A.D. 250 – 900) to Postclassic (A.D. 900 – 1200) transition (Figure 1). Given that incense burners were important components of Maya ritual paraphernalia at both elite and non-elite levels, and that their forms and decoration were commonly imbued with symbolic and religious meaning (Acosta 1975; Deal 1982: 619, 620; Sáenz 1956), this study aims to explore changes and continuities in the use and manufacture of incense and incense burners through time with the purpose of better understanding the continuation and/or innovation of ritual and religious ideas and their relation to broader social, economic and political factors in Maya society during the end of the Classic period and the beginning of the Postclassic.

The use of incense and incense burners in ritual is indicated by the presence of censers in presumed ritual contexts such as caches, burials, or construction deposits and in their representations in Maya art at sites located in the Maya region since Preclassic times. Classic Maya texts include statements of ritual activities that focus on sacred fire, in which incense burners were used (Stuart 1998). The use of incense and incense burners as ritual objects is also evident in Maya codices—usually dated to the Late Postclassic or Colonial period—where they are represented as important elements in ceremonies. Numerous colonial documents written by Spanish missionaries further attest the ritual use of incense burners during historic times, and Maya incense and incense burners continue to be used today in rituals by some indigenous communities (Deal 1982; R.H. Thompson 1958: 109).

Incense burners and the aromatic smoke that was produced in them acted as a medium through which communication with ancestors and supernatural beings was enacted (Cuevas and Bernal 2002). The form and decoration of these vessels were the product of specific principles of design and iconography (Acosta 1975; Deal 1982: 619, 620; Sáenz 1956). The vessels were manufactured in a number of different forms, many of which are depicted in Maya art with scrolls of smoke shown coming out of the vessels in contexts of ritual ceremonies. Some representations depicted on the vessels include ornamented natural or supernatural beings accompanied by elaborate motifs, which have been interpreted as representing deities as well as important ancestral lineage leaders (Cuevas 2004: 59-61, 211-213). Other vessels do not include effigy representations and are plain or with non-representational motifs.

In this study, the term 'incense burner' is used to refer to a container in which incense is burnt (*Encyclopaedia Britannica, 2003*). The term 'censer' is used interchangeably with 'incense burner' since censers are also defined as vessels in which incense is burnt (*The Oxford English Dictionary, 1989*). Another term used for this object is '*incensario*', the Spanish word for incense burner or censer. Incense is 'an aromatic gum or other vegetable product, or a mixture of fragrant gums or spices, used for producing a sweet smell when burned' (*The Oxford English Dictionary, 1989*). For the purpose of this study, all pottery vessels that display evidence of burning inside are tentatively considered incense burners. Their identification as vessels in which aromatic substances were burnt is further clarified by the study of the forms of the vessels and their similarity with representations of incense burners in Maya art; by the study of their archaeological contexts of recovery and their association with contexts as depicted in Maya art; and by a consideration of the information contained in epigraphic texts. Ethnohistoric and ethnographic data provide information about incense burners and the contexts in which they were used during historical times. Applied cautiously, this information can also be used to clarify the identification of vessels as incense burners. The chemical analysis of residues contained in some vessels also serves in this study to clarify their nature as containers in which aromatic substances were burnt.

Changes in the archaeological contexts of Maya incense burners and their forms and representations during the Classic and Postclassic periods have been suggested. Some of these changes have been associated with the introduction of new 'cults' in the Maya lowlands during the end of the Classic period (Ringle *et al*. 1998; J.E.S. Thompson 1957) and with a change in the political structure of Maya society (P.M. Rice 1999).

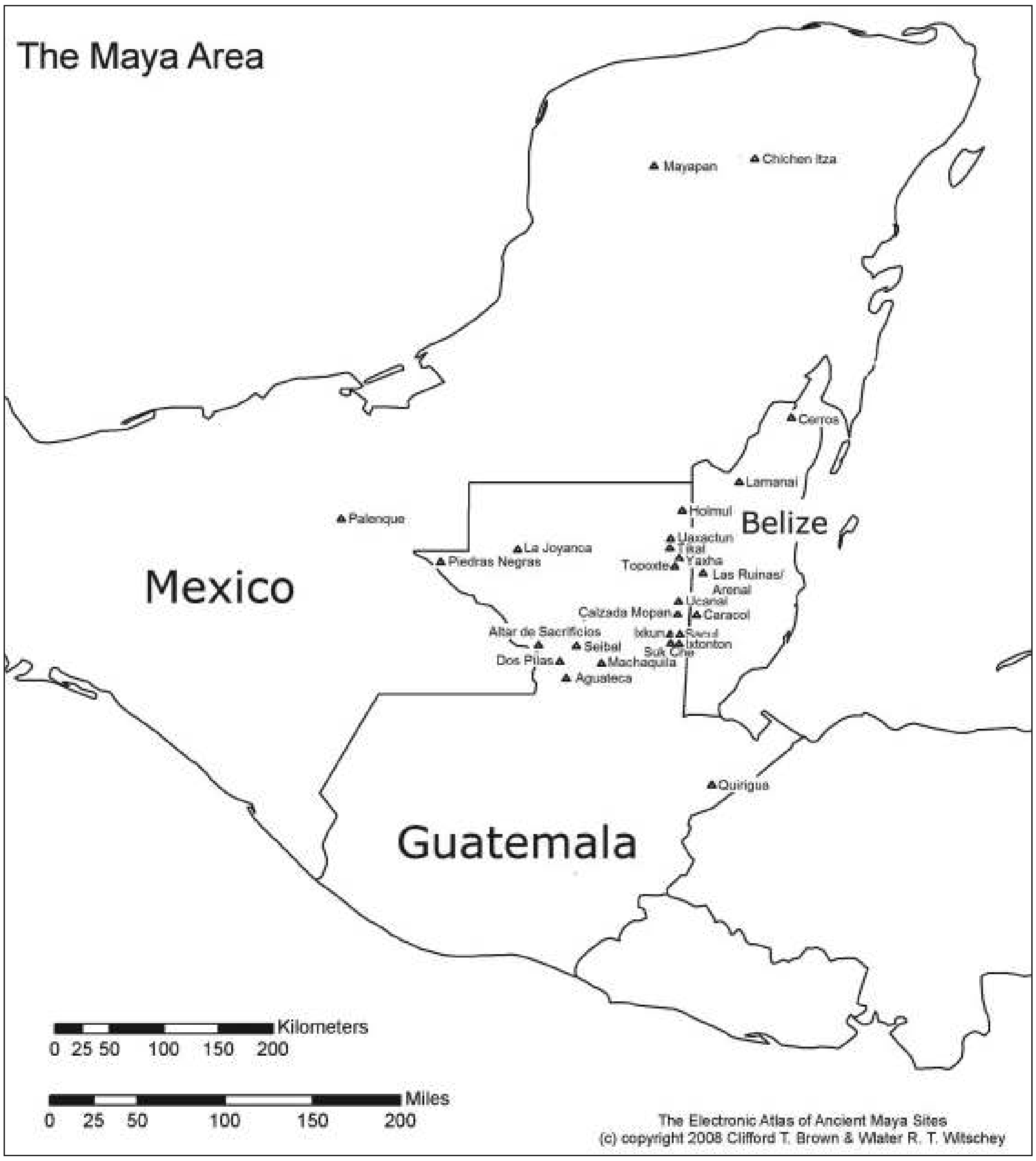


Figure 1 Map of the Maya area (modified from Brown and Witschey 2008)

This study aims to explore these ideas based on a sample of incense and incense burners from sites in the central and southern Maya lowlands. I address the use of incense through time, analyse residues and burning patterns to confirm that the vessels were used to burn incense, examine incense burner use in specific contexts of recovery diachronically, and explore the forms and decoration of censers through time. The diachronic study of incense and censers is conducted in order to explore continuities, discontinuities, and innovations in ritual activities and possibly in religious ideas and concepts represented by use of these materials in the southern and central Maya lowlands.

Although my original hope was to study material from the end of the Classic and the beginning of the Postclassic, my focus on the Peten resulted in a sample characterized by a large amount of incense burner material from the end of the Classic period and very little material from the beginning of the Postclassic. Essential to answering the ultimate question of what happened in the Maya area that culminated in Postclassic society is to explore the changes that took place in the Late and Terminal Classic periods. My assumption is that the roots of the Postclassic period lie in the periods that preceded it. This study is therefore largely focused on materials from the end of the Classic period in the search for continuity and change in the conditions and events that brought an end to the Classic period; these materials are also compared to a smaller sample of Postclassic materials. My future research plans are to expand into the Early Postclassic period in more detail.

Several terms have been used in the literature to address the end of the Classic period and are used in this book. These are the Epiclassic, the Late Classic, and the Terminal Classic. The Epiclassic is a term generally used to address a time associated with the disintegration of the Classic world in Mesoamerica, traditionally placed between A.C. 600/700 and 900/1000 (Jiménez 1959: 1063-1064). 'Epiclassic' is frequently used in the archaeological literature to describe sociocultural phenomena that occurred during the transition from the Classic to the Postclassic period; the temporal range of the Epiclassic varies in different areas due to local processes of cultural development. In Central Mexico, the Epiclassic is associated with the fall of Teotihuacan (Fournier *et al*. 2006). The last centuries of the Classic period have also been divided into a Late Classic and a Terminal Classic period, the latter encompassing the final part of the Late Classic (cf. Arnauld *et al*. 1993; Benavides 1995: 119; Culbert 1973a; Daneels 1995: 85-86; Sabloff 1975: 9). The temporal implications of these terms also vary in different areas of Mesoamerica and even within the Maya area due to interpretations of local processes of cultural development. In this study, the chronological terms and/or dates used for the materials addressed are those assigned by archaeologists in the records that were made available to me in the form of electronic files, reports, and publications. In a similar way, when referring to different author's interpretations of the archaeological record, their chronological terms or dates are respected in the text. The reader is therefore made aware of the consequent switching among the chronological terms sometimes used in the text. Basically, the term Late Classic normally refers to a period in the Maya lowlands anywhere from A.C. 600 to 750 or possibly 800. When it is used, archaeologists are referring to a time when Classic Maya culture is yet thriving. When 'Terminal Classic' is used, there is already evidence of considerable change in some areas but not in others. Therefore 'Terminal Classic' often carries with it the intimation of the ending of Classic culture. How these are manifested in terms of calendar years varies.

The meaning of specific contextual and architectural terms also often varies according to their use by different archaeologists. In this study, the terminology used in the presentation of data and their interpretation by different authors is the one present in the files, records, and publications used. When referring to my interpretation of the archaeological record, I use terms as defined by Loten and Pendergast (1984) and other dictionaries. Some of these terms are defined in the Appendix in Section A (p. 138) for clarity.

In the following chapter (Chapter Two) I address the Classic to Postclassic transition in the Maya lowlands. I describe what is known about this period and review extant theories that have been proposed to explain changes in material culture and settlement patterns during the end of the Classic and the beginning of the Postclassic period. I discuss what archaeologists have written about continuity and change in material culture associated with rituals and how these have been interpreted, thus providing the background information for my research. In Chapter Three I examine aspects of the nature of rituals and I discuss the use of incense and incense burners in rituals cross-culturally in an attempt to illustrate how the study of rituals (through censers and incense as the material culture of rituals) can shed light on social and religious aspects of a society. In Chapter Four I discuss previous studies of censers in the Maya lowlands in order to place my research in context and to show how my study of incense and incense burners builds on previous work. In Chapter Five I discuss my censer sample and research methodology. I present my research questions, describe how the censer material was recorded, the types of analyses conducted, and the criteria used for the selection of the materials that were used in the analyses.

In Chapter Six I present the censer material in my sample from primary contexts. I characterize the censers on the basis of similarities in form and decoration together with detailed information about the contexts. Chapter Seven involves a distributional analysis of the censer material presented in the previous chapter in addition to other material from my sample from secondary contexts, considered to be associated with specific structures. The analysis aims at identifying associations of specific kinds of censers with particular structures, with peripheral vs. central areas of sites, as well as with residential vs. religious and public/administrative architectural groups. In Chapter Eight I present an interpretation of some of the trends inferred from the distributional analysis with a consideration of diachronic aspects of the censers. I also address previous theories about changes and continuities in the use of censers in rituals during the transition from the Classic to the Postclassic period, and what the trends that arise can tell us about broader aspects of society during this time. In Chapter Nine I discuss incense burning patterns with the aim of identifying the use of incense in vessels and of providing a better understanding of behaviour associated with incense burning in ritual practices. In Chapter Ten I present information about different kinds of incense used in the Maya lowlands and Central Mexico from Modern, Colonial, Postclassic, and Classic times. The incense is compared in an attempt to reveal similarities and differences in its manufacture in both areas through time. Chapter Eleven draws general conclusions about the use of incense and incense burners in rituals during the transition from the Classic to the Postclassic period in the Maya lowlands.

2. THE END OF THE CLASSIC PERIOD AND THE TRANSITION TO THE POSTCLASSIC

2.1. INTRODUCTION

As expressed in the previous chapter, this research aims to explore ritual and religious ideas from the Late Classic and Early Postclassic periods by examining censers and incense. In this chapter I address the Classic to Postclassic transition in order to provide the background information and the general problems that archaeologists have encountered in understanding this transitional period. The information in this chapter is relevant to my research since my study of censers aims at answering some questions concerning what happened during this period.

I discuss some of the differences in material culture and settlement patterns from the Classic and Postclassic periods and I present some of the theories that have been proposed to explain these differences in order to place my study of censers in context. Particular emphasis is given to the presence of specific elements in the Maya area that have been identified as foreign or Mexican and that have been associated with the introduction of new ideas and/or people in the Maya area by the end of the Classic period. Some of these elements occur in the sphere of ritual and religion in the form of artistic styles or symbols in material culture. Their presence in the Maya area as well as in other areas of Mesoamerica has been used to suggest the spread of a pan-Mesoamerican religion during the Epiclassic period, and of pan-Mesoamerican symbols in religion during the Postclassic period. Changes in censers in the Maya area have been linked to these phenomena, which are presented here as background to my research.

2.2. THE NATURE OF CHANGE

The Classic and Postclassic periods in the Maya lowlands evidence differences in material culture and settlement patterns that suggest changes in cultural practices as well as in the political and economic structure of Maya society. Some of the changes which were first observed in sites of the southern Maya lowlands during the eighth and ninth centuries, especially in western Peten (i.e. Seibal and Altar de Sacrificios), led to the notion of a general decline and 'collapse' of Maya civilization (Culbert 1973a). Among the most important changes on which the concept of collapse was based was the cessation of Long Count dates and royal hieroglyphic inscriptions carved on monuments (*stelae*); reduced emphasis on monumental architecture (temples and palaces); and termination of particular elaborate material culture (ornate and exotic artefacts) associated with elites who claimed identity as divine lords or *k' uhul Ahau* (Demarest *et al*. 2004b: 569-572; P.M. Rice *et al*. 2004: 9). Studies conducted on ceramics marked the reduction or cessation of beautifully made Late Classic polychromes (Rice and Forsyth 2004: 54; Willey *et al*. 1967: 311), especially with human figure representations, as well as the appearance of Fine-paste pottery during the Terminal Classic interpreted as having non-Maya traits. New forms of incense burners were also identified (Sabloff 1970, 1973). These and other data led to the supposition that many sites in the Maya lowlands had been partly or wholly abandoned. For many archaeologists (e.g. Proskouriakoff 1955: 88) the Postclassic was a period of decline in Maya culture when compared to the Classic period.

By the mid-20th century, several theories had been proposed to account for these changes, including the spread of epidemic diseases (Saul 1973; Shimkin 1973; Spinden 1928), natural catastrophes (Adams 1973b: 27; Mackie 1961; Sabloff 1973), peasant revolts against the ruling elite (Altschuler 1958; Erasmus 1965; Kaplan 1963; Kidder 1950; J.A. Mason 1943; Morley 1956), intersite warfare (Cowgill 1979; Demarest 1978; Miller 1993; Schele and Miller 1986; Webster 1977, 1978), climatic and anthropogenic changes in the environment (Cook 1921; Cooke 1931; Morley 1920, 1946: 71-72; Shimkin 1973), and external invasions (Adams 1971; J.A. Graham 1973; Sabloff 1971, 1973; Sabloff and Willey 1967).

More recent investigations, however, including areas that had previously not been studied in the Maya lowlands, revealed that not all lowland Maya sites were affected in the same way or at the same time. While some sites appear to have experienced decline and depopulation during the Late Classic and Terminal Classic periods, evidence exists that indicates the emergence of other sites during the Terminal Classic, and the continuation of occupation and growth of some sites throughout the Postclassic period. What was originally considered a sudden 'collapse' of many sites actually spanned several centuries (Demarest *et al*. 2004a).

Sites in the Pasión and Usumacinta regions of western Peten were the earliest to decline during the Late Classic period in the eighth and ninth centuries and in a more dramatic and abrupt manner than other sites in the lowlands (Demarest 2004: 102-124; O'Mansky and Dunning 2004: 83-101). In the central lowlands, while some sites such as Tikal, Uaxactun and Calakmul experienced decline and depopulation during the Terminal Classic period (Braswell *et al*. 2004: 189-194; Valdés and Fahsen 2004: 140-161), other sites in the Peten lakes region were continuously occupied into the Postclassic. In the southeastern lowlands Fash *et al*. (2004: 260-287) describe the political fragmentation of the kingdom of Copan during the eighth century and its collapse in the ninth during the Terminal Classic period. The events in southeastern Peten and Belize were variable. In southeastern Peten, Laporte (2004: 195-230) describes a decline in population and public construction in some centres during the Terminal Classic—perhaps due to a process of nucleation and regional political organization—whereas other centres such as Ixtonton, Sacul and El Chilonche experienced expansion and florescence during the Late Classic and Terminal Classic periods and occupation during the Postclassic, although less intensive.

In Belize, some Classic centres experienced abandonment during the Terminal Classic such as La Milpa and Xunantunich (Adams *et al*. 2004: 324-341; Ashmore *et al*. 2004: 302-323; Hammond and Tourtellot 2004: 288-301). However, many other sites including Lamanai (E. Graham 1987a, 2000/2001, 2004, 2006; Pendergast 1981a, b, 1984, 1985a, b, 1986a, b, 1992), Chau Hiix (Andres and Pyburn 2004: 402-423) and Tipu (Aimers 2004; E. Graham 1991; Jones *et al*. 1986; Simmons 1991), as well as a number of coastal sites (E. Graham 1989; McKillop 2002), were occupied during the Terminal Classic through the Postclassic period. Interestingly, coastal or interior wetland locations in Belize are believed to have experienced an increase in population at the end of the Classic period (Sidrys 1983) and the number of sites reported with Postclassic occupation in northern Belize is large (Aimers 2007: 343).

During the Late Classic period an increase in the size and number of sites close to the Gulf Coast in the Chontalpa area around Comalcalco has been reported, and the number of sites in this area was even larger during the Postclassic period (Rands 1973: 202). Sites in the northern lowlands flourished from A.D. 750 to 1100, a period that included the decline of many centres in the southern Maya lowlands. During the Terminal Classic, from the mid-eighth century, Puuc sites grew and new centres were established which developed new architectural styles and motifs (Carmean *et al*. 2004: 424-449). Ultimately, however, Puuc centres such as Uxmal declined by A.D. 950 (Carmean *et al*. 2004: 432) and other cities such as Sayil followed the same path (Tourtellot and Sabloff 1994; Tourtellot *et al*. 1990). Shortly after, between A.D. 1050 and 1100, Chichen Itza, believed to have been a Late Classic Maya capital would have also declined (Cobos 1998a, 1998b, 2004: 517-544). Monumental construction at the site is suggested to have ceased at about A.D. 1000 according to the revised chronology (A.P. Andrews *et al*. 2003).

Most of the identified Postclassic occupations in Peten are located in the lakes area of central Peten and the Belize River Valley (Forné 2005, 2006). However, Postclassic occupations have also been reported at sites thought to have experienced depopulation by the end of the Classic period. These occupations can be found in Petexbatun—Tamarindito and Punta de Chimino—associated with a reoccupation of parts of these sites (Foias 1996); at Seibal in the form of ceramics and simple houses (Sabloff 1975: 222-228; Tourtellot 1988: 223, 407); at Altar de Sacrificios based on the presence of sherds that post-date the Jimba phase (Adams 1971); and at Tikal in residential groups dated to the Caban phase (Laporte 2003) as well as in a burial in Temple I (Adams and Trik 1961; Culbert 1973b). As previously mentioned, in southeastern Peten a Postclassic occupation was also recorded at sites such as Ixtonton, Sacul and El Chilonche. The Postclassic in this area, however, has not been separated into Early Postclassic and Late Postclassic (Laporte 2004). In the Puuc area of the northern lowlands, recent investigations also suggest that at least some communities appear to have transformed into Postclassic centres (Carmean *et al*. 2004: 446). Recent excavations at Chichen Itza in the northern lowlands suggest that the city would have been occupied until A.D. 1300, a later time than previously thought (Chung 2000).

The Postclassic period has been regarded as a time of mercantilism and long-distance trade, as suggested by ethnohistoric accounts of Spanish chroniclers who wrote about the commercial activities of the sixteenth through eighteenth centuries (Landa 1941) and as reflected in the traded goods themselves (Rathje 1975; Sabloff and Rathje 1975). Foreign or 'Mexican' influences have often been cited to characterize the period (D.Z. Chase and A.F. Chase 1982; Lincoln 1986; Proskouriakoff 1955; Robles and Andrews 1986; Scholes and Roys 1948: 1; J.E.S. Thompson 1970; Tobías 2001; Tourtellot, Sabloff and Carmean 1992). The Maya of the Postclassic have been regarded as a cosmopolitan society that shared a range of distinctive cultural features, as well as a rising middle class (D.Z. Chase and A.F. Chase 2004: 23). These inferences derive from the wide distribution of art styles (Nicholson 1960; Robertson 1970); common aspects of material culture such as the occurrence of Plumbate pottery (Shepard 1948) and tanged points (Rovner 1975); and architectural trends (D.S. Rice 1986; P.M. Rice and D.S. Rice 1985; Tourtellot, Sabloff and Carmean 1992). A political and organizational structure close to a confederate type of government similar to the *multepal* confederacy of the later Postclassic states has also been suggested for earlier Postclassic times (Fox 1989).

Recent investigations, however, suggest that various elements previously thought to characterize the Postclassic Maya actually originated during the Classic period (Demarest *et al*. 2004a). E. Graham (1987b, 1989, 1994) and D.Z. Chase and A.F. Chase (2004: 23), for example, point out that the lowland Maya had a long history of involvement in maritime transport, travel and long-distance trade. The history includes contacts and exchange of trade goods with the Guatemala highlands as well as the Mexican highlands during the Early Classic period (see also Ball 1974, 1983; W.R. Coe 1967; and Pendergast 1970b). Diane Chase and Arlen Chase (2004: 23) also suggest that the growth of a middle social level may have originated during the early part of the Late Classic period (if not earlier) at sites such as Caracol (D.Z. Chase and A.F. Chase 2004: 24). Moreover, changes in the political and organizational structure of some Maya centres—possibly including Chichen Itza, Seibal and Quen Santo (Kowlaski 1989) and perhaps Uxmal (Schele and Freidel 1990: 374) into complex confederate governments—are believed to have likely originated during the Terminal Classic rather than the Postclassic period. Similarly, several 'Mexican' elements including ladle censers and spiked pedestal-based censers were also present in the Maya area during the Terminal Classic period—if not earlier (see Section 7.1).

Migrations of people have been proposed to account for the demographic changes that occurred during the end of the Classic and beginning of the Postclassic periods. It has been suggested that people from the declining western and southern kingdoms of the Maya lowlands may have migrated to central Peten, Belize and the northern lowlands during the ninth century, resulting in population increases in these areas (Demarest 2004; Demarest and Escobedo 1998; P.M. Rice and D.S. Rice 2004). However, the shifts in architectural investment and population distributions may have—at least in part—been due to the political organization of the Maya with cycles of rotating power based on major cities ritually 'seating' the *may*, a calendrical interval of 256 years that consisted of thirteen *K'atun* cycles of twenty *tuns* (approximately twenty years) each, on which in each *K'atun* a subsidiary centre was seated (P.M. Rice 2004). In fact, a statement made by Fray Diego de Landa during the Colonial period noting that in every town they built a temple and that the reason why there were so many temples in Yucatan was the movement of populations many times (Landa 1941: 18) may relate to the cities seating the may.

Archaeologists have also come to a general consensus that many of the changes in material culture and settlement patterns that mark the transition from the Classic to the Postclassic period most likely suggest—among other things—the end of 'particular political and economic systems' (P.M. Rice *et al*. 2004). What ceased to exist by the end of the Classic period in most of the west and some areas of central Peten was a political system of divine kingship, archaeologically manifested by the disappearance of 'a system of theater-states identified by Emblem Glyphs, dominated by the *K'uhul ajawob* (holy kings) and their inscribed stone monuments, royal funerary cults, and tomb-temples, the political hegemonies of these divine lords, and their patronage networks of redistribution of fineware polychrome ceramics, high-status exotics, and ornaments' (P.M. Rice *et al*. 2004: 9).

2.3. THE PRESENCE OF 'MEXICAN' ELEMENTS IN THE MAYA AREA

As was previously mentioned, several elements in material culture have been associated with non-Maya ideas and/or people in the Maya area by the end of the Classic and during the Postclassic period. The nature of some of these elements is discussed below as it may serve to increase understanding of aspects of the transition between the two periods as proposed in the literature. In addition, the reasons for the presence of these elements could relate to the changes that are identified in incense burners during the end of the Classic period and the beginning of the Postclassic. In what follows I present and discuss specific elements that have been identified as foreign or Mexican at Chichen Itza, in the Río Usumacinta region, and in the Guatemala highlands. While the literature about the presence of non-Maya elements is more extensive in these locations, it should not be assumed that it is restricted to them.

A large body of data suggest the introduction of 'Mexican' foreign ideas, and possibly people, at this juncture in Maya history. The time of arrival and origin of Mexican ideas or people who may have had an influence into the Maya area is not clear. A number of ethnohistoric records contain information about the history and origin of 'Mexican' foreign groups in Yucatan (including the books of *Chilam Balam* (Edmonson 1982; Roys 1933) and the *Relación de las Cosas de Yucatán* (Landa 1941). Colonial texts from highland Guatemala also suggest migrations of groups of people into the highlands of Guatemala who claimed Toltec descent (i.e. the *Popol Vuh* (Tedlock 1996) and the *Anales de los Cakchiqueles* (Recinos and Goetz 1953)). What was meant by foreign in the chronicles is not clear and the foreignness of some of these lineages has been called into question. Christensen (1997) asks for caution in accepting the foreign origin of the ruling elites described in these accounts, pointing out that migration narratives of elites who claim a foreign and superior origin are often used as justification for their positions of authority.

Whereas ethnohistoric accounts indicate the presence of Mexican peoples and the spread of Mexican elements in material culture during the Late Postclassic period, archaeological evidence suggests that the presence of what are believed to be Mexican elements in the Maya area has a long history, and that many of these elements originally thought to have appeared during the Postclassic already existed during Epiclassic and sometimes Late Classic times. Christensen (1977: 1) notes the difficulty in reconciling what is found in the archaeological record with the texts and suggests that the difficulty lies in the use of a concept of time in the narratives, which may not be the same as what we would understand as chronological.

2.3.1. 'Mexican' elements at Chichen Itza

Affinities between Chichen Itza in the northern Maya lowlands and the city of Tula in Hidalgo, Mexico have long been recognized (Diehl 1983: 146-152; Jones 1995; Ruz 1964: 217-218). Among the similar attributes noted by Ruz (1964: 217-218) are interior colonnades (Marquina 1951: 875), the ball court game with defined end zones (Marquina 1951: 26; Ruppert 1952: 79, 151, 153), round structures (Marquina 1951: 890-893; Pollock 1936)[1], platforms adorned with carved skulls (Marquina 1951: 887-888), roof adornments in the *almena* style (Marquina 1951: 849, 862, 885, 894), and the use of the *talud tablero* in temples and in basal platforms (Marquina 1951: 849-869). Examples of 'Toltec' Maya buildings at Chichen Itza are the Temple of the Warriors, which is said to resemble the pyramid of Quetzalcoatl at Tula (Jones 1995: 7), and the Great Ball Court, similar to Ball Court II at Tula (Jones 1995: 8). Other structures originally identified as Toltec at Chichen Itza are El Castillo, the Venus Platform, and the Platform of the Eagles (G.F. Andrews 1995: 291). Similarities between the two sites have also been identified in sculpture, as in columns with serpent forms, warriors in pillars and jambs, jaguar processions, chac-mools, feathered serpents, human-bird serpents, atlantean figures, and banner bearers (Ruz 1964: 118).

---

[1] Round structures of different sizes and shapes exist throughout the Maya lowlands and other parts of Mesoamerica and in the Maya lowlands some are present since the Preclassic period (Aimers *et al*. 2000). It has often been the case that round structures without any specification have been characterized as belonging to a Mexican tradition and therefore the association is not clear.

The ethnicity of the groups responsible for these attributes is not clear. It has been suggested that the Toltec-Chichen style reflects a multi-ethnic or bi-ethnic community of Yucatec Maya and peoples from the Gulf Coast (Velázquez *et al*. 1990: 20). However, recent research suggests that despite the similarities in material culture with Tula, some of the elements that have been traditionally identified as 'Toltec' in Chichen Itza and other Maya sites have a long tradition in the Maya area (Lincoln 1986).

If the new chronological placement of monumental construction and other elite activity at Chichen Itza in the Terminal Classic period—based on radiocarbon, epigraphic and architectural evidence (A.P. Andrews *et al*. 2003)—is correct, many of the 'Mexican' elements associated with this city would have occurred before the Postclassic period. The new chronological placement of Chichen Itza (A.P. Andrews *et al*. 2003) and new chronologies suggested for the Toltec occupation of Tula (c 14) (1164 ± 25 B.P.) during the eighth century[2] (Sterpone 2000/2001) suggest that the two sites may have been contemporaneous, and therefore it is no longer clear if what are called Mexican elements at the site of Chichen Itza came from Tula or were introduced by Toltec peoples. Interestingly, recent work by Geoffrey G. McCafferty (2007) in the area of Cholula, suggests interactions between groups of people living in Cholula and the Gulf Coast area during the Epiclassic period, and notes that people from both of these areas may have also had interactions with people from the Maya area during the Epiclassic. The ethnicity of the groups of people who had an influence in the construction of the elements mentioned above at Chichen Itza is still not clear.

2.3.2. 'Mexican' elements in the Río Usumacinta region

Non-Maya elements dated to the Terminal Classic period have long been suggested for sites in the Río Usumacinta region such as Uaxactun, Altar de Sacrificios (Adams 1973a; Willey 1973), and Seibal (J.A. Graham 1973, 1990; Sabloff 1973; Tourtellot 1990; Willey 1990). At Seibal, for instance, ceramic, architectural, monumental, and other artifactual data have been interpreted as suggesting the arrival of foreign peoples and even a change of elite at the site during the beginning of the ninth century (J.A. Graham 1973; Sabloff 1973). Examples of non-Maya traits on various stelae include non-Classic Maya figures with long hair, unusual costumes and regalia, and hieroglyphs. Other suggested non-Maya features are said to be reflected in circular structures, ballcourts, causeways, radial temples, a 'Toltec' prowling jaguar, house plans and burial patterns, fine-paste pottery, and flat metates (J.A. Graham 1990; Sabloff 1975; A.L. Smith 1982; Tourtellot 1988, 1990; Willey 1978, 1990). Terminal Classic changes in incense burners at the site have also been noted (J.A. Graham 1973: 119, see below) together with a shift in the locus of ceremonial activity from Group D to Group A at the site (Sabloff 1975). Other non-Maya-style vessels present in the area are grater bowls. Grater bowls are reported to be present in Late Classic times and to be particularly common in the Terminal Classic from the Pasión area, across into the Belize Valley. The vessels appear to continue into the Early Postclassic period in the Peten lakes region (Rice and Forsyth 2004: 54) and also in Lamanai (E. Graham 1987a; Pendergast 1982). Grater bowls have been interpreted as suggesting changes in cuisine that may relate to the physical presence of people with ties to Central Mexico (Aimers 2004; Fry 2003: 86; Ringle *et al*. 1998: 215).

More recently, Tourtellot and González (2004: 62, 71-73) have argued against what was previously thought to be evidence of migration or conquest at Seibal during the Terminal Classic period. The authors have questioned the foreignness of the figures represented on stelae; they suggest that the features thought to be foreign could represent people of a lower status rather than a different cultural identity (cf. Miller 1993: 407; cf. Tourtellot and González 2004: 64). They also have argued that although ballcourts, radial pyramids, range-type buildings, and causeways might have been new at Seibal during the Terminal Classic period, they were not new to the Late Classic Maya (Kubler 1975; Pollock 1965), and several elements were present at this time in the Petexbatun area, as well as the northern lowlands. Moreover, they have noted that Bayal burials do not clearly reflect foreign elements and also that the size, shape, and plans of perishable houses do not appear to reflect new cultural groups during Tepejilote and Bayal times (Tourtellot and González 2004: 73).

In regards to the Fine Paste wares, Willey (1990: 257) has noted that these wares – which appear to have originated in the Gulf Coast region of Tabasco and Campeche—perhaps as early as the Late Preclassic and certainly by the Early Classic period—were found in the vicinity of Palenque together with Fine Grey types by early Late Classic times. Foias (1992: 272-276) has also suggested that Fine Grey vessels appear in the Petexbatun area during the Late Classic, after A.D. 750, although not at Seibal. According to Foias and Bishop (1997) and Willey (1990: 257-258), by Bayal times, fine paste wares were produced in the lower Pasión River, and perhaps Seibal. Accordingly, Terminal Classic fine-ware monochrome ceramics would not have been imports in the lower Pasión River area but local products using technologies introduced earlier into the

---

[2] This chronology differs from the traditionally accepted date of Toltec occupation during the Tollan phase A.D. 950-1150 in Tula (Cobean 1990). Sterpone's preliminary placement of the initial Toltec occupation in Tula Grande in the 8th century (during what he calls the Toltec I period) is based on interpretations of stratigraphic sequences, radiocarbon dates and ceramics, especially associated with what he considers to be the construction of the Plazoleta Norte at the site (Sterpone 2000/2001).

Petexbatun from the west. One of the Fine orange types, the Pabellion Molded-carved, has been linked to Bayal monuments at Seibal, particularly those which have 'long-hair' and possibly 'foreign' figures. Sabloff (1975: 239) suggested that many of these non-Maya traits also appear in the Puuc region and at Chichen Itza. In reference to these vessels, Adams (1973a: 145-146, 148) suggested that the style of the human figures in the Pabellon Modelled-carved vessels appears to be of the Maya type, and the vessels in general have affinities with Toltec styles at Tula as well as Chichen Itza. Moreover, the glyphic style of the Pabellon Modelled-carved vessels seems to have both Maya and Mexican attributes.

2.3.3. 'Mexican' elements in the Guatemala highlands

Fox (1980: 43) suggests two Mexicanization processes in the highlands of Guatemala: The first consists of Middle Classic influences that come directly from highland Mexico (e.g. Teotihuacan influence at Kaminaljuyu) and the second comprises two Mexican-influenced archaeological patterns in the Río Negro (Usumacinta) and Río Motagua basins from the Gulf Coast Mexican-Maya frontier. One of these would have occurred during the Epiclassic (ca. A.D. 800-1100 [date according to Fox]) and the other during the Early Postclassic period (ca. A.D. 1100s-early 1200s). According to Fox, the Epiclassic pattern would have come from the general Mexican-Mayan frontier along the Gulf Coast (Veracruz through western Yucatan). The archaeological Mexican evidence during the Epiclassic period along the Río Negro and Río Motagua basins is described as consisting of—among other things—long buildings, round or oval-shaped temples, round pillars of colonnaded buildings, I-shaped enclosed ballcourts, *tzompantlis* or skull racks, and Quetzalcoatl sculptures (Fox 1980: 45).

The origin of elements identified as Mexican in the Maya lowlands is not clear. Future investigations with more precise chronological assessments of material culture may reveal the contemporaneity of some of these elements in various areas of Mesoamerica during the Epiclassic period. Similar elements are likely to reflect the sharing of concepts and ideas across large areas. Although archaeologists have long attempted to trace the origins or the spread of ideas reflected in material culture to support a diffusionist hypothesis (Fournier *et al*. 2006), the sharing of specific attributes of material culture during the Epiclassic period in Mesoamerica is important in itself to understand aspects of the transition from the Classic to the Postclassic period in the Maya area in a broader context.

2.4. THE SPREAD OF PAN-MESOAMERICAN SYMBOLS IN MAYA RELIGION

Changes in religion in the Maya lowlands have been suggested during the Epiclassic, Early Postclassic and Late Postclassic periods. Among the most important of the supposedly 'Mexican' elements thought to have had an influence in Maya religion is the feathered serpent that has often been identified in the Maya area as Kukulcan, a Maya version of Postclassic Quetzalcoatl (Landa 1941: 22-23) from Central Mexico. Representations of the feathered serpent are especially strong in the sites of Chichen Itza, Uxmal and Mayapan in northern Yucatan. The widespread representation of the feathered serpent and other symbols in the Maya area as well as in other parts of Mesoamerica has led to suggestions of: a) the spread of a 'Postclassic Religious style' during the Early Postclassic period (Smith and Heath 1980), which based on the new chronological revisions for Chichen Itza, would have been present from the end of the Classic period—if not earlier; and b) the introduction of a cult centred around Quetzalcoatl/Kukulcan during the Epiclassic period (Ringle *et al*. 1998).

2.4.1. The Postclassic Religious Style

In his study of common symbols associated with the Mixteca-Puebla style—a 'horizon style' that had limited temporal distribution and a broad geographical distribution in Mesoamerica during the Postclassic period—Nicholson (1960) identified as part of this style serpents, jaguars, solar and lunar disks, the Venus symbol, skulls and skeletons, jade, the *xicalcoliuhqui* (stepped-fret motif), and the 20 *tonalpohualli* signs[3]. More recently, Smith and Heath (1980: 15) have argued that Nicholson's definition of the Mixteca-Puebla style includes representations in Mesoamerica from A.D. 800 to until the Spanish contact. The authors suggest the inclusion of three categories under the term 'Mixteca-Puebla'. These are: a) a 'Postclassic Religious Style' that they define as 'a collection of standardized religious symbols that were popular throughout Mesoamerica beginning in the Early Postclassic period' (although more recent revised chronologies suggest that a Terminal Classic date would be more appropriate), b) a 'Mixtec Codex' style, defined as 'a highly-distinctive Late Postclassic polychrome narrative style most commonly associated with codices, murals and ceramics of the Mixteca-Puebla region' and c) the Mixteca-Puebla Regional Ceramic Sphere, described as 'the local ceramic complexes of the Mixteca-Puebla region which share stylistic features'. Smith and Smith-Heath suggest that the Mixteca-Puebla region and the Mixteca-Puebla Regional Ceramic Sphere are locally developed styles that would have evolved out of the Postclassic religious style.

According to Smith and Heath (1980) the Postclassic Religious Style—which is of most interest here—was widely spread in Mesoamerica. Its widest distribution was achieved in the Early Postclassic period (ca A.D. 900-1100) and continued in many areas until the Spanish conquest. Whereas the style is the same as the one described by Nicholson (1960: 115), its most common symbols are identified as: the feathered serpent in several varieties, including the entire motif; feathers only and head only; and the *xicalcoliuhqui*, also known as the 'greca' or stepped-fret motif. These symbols are mostly represented in polychrome painted ceramics, which are found over much of Mesoamerica in Postclassic occupations (Castillo 1972). The symbols usually occur in one or more horizontal bands that circle the exterior of the vessel, although the interiors of bowls are also commonly decorated (Smith and Heath 1980: 20). The authors suggest a non-nuclear model for the distribution of the Postclassic Religious Style. In this model, the style would have been spread through the extensive trade networks throughout southern and coastal Mesoamerica, networks that were different from those that existed before the fall of Teotihuacan. They also argue that the transmission of the style through these trade networks is manifested by its association with Plumbate and Fine Orange pottery (Nicholson 1960: 117; Vaillant 1940: 299). Smith and Heath (1980: 30) suggest two possibilities which could account for the diffusion of the style: a) that the basic religious ideology and practices would have spread with the style along trade routes, and b) that the particular art style may have spread within the context of an already prevalent religion.

---

[3] *Tonalpohualli* is the Nahuatl term given to the sacred calendar by the Mexica.

2.4.2. The spread of a religious style based on Quetzalcoatl/ Kukulcan and Tlaloc

Based on archaeological and ethnohistoric data, as well as on information in Mixtec codices—in particular, the *Codex Nuttall*—Ringle and colleagues (1998) have suggested the spread of a religion focused upon Quetzalcoatl/Kukulcan in his aspects of Feathered Serpent throughout Mesoamerica during the Epiclassic and through the Postclassic period. According to Ringle and colleagues (1998), the spread of the Quetzalcoatl cult provides an explanation for the distribution of a number of shared symbols in architecture and iconography throughout Mesoamerica, they identify these shared symbols as an Early International Style of Maya-Toltec characteristics and a later Late International style characterized as Mixteca-Puebla.

The identity of Quetzalcoatl as a deity, a man, or both is not always clear in Mesoamerican ethnohistoric records. It has been suggested that the name Quetzalcoatl could have referred to more than one historical leader (Christensen 1997: 1). Whereas some ethnohistoric accounts describe the departure of Quetzalcoatl from central Mexico for the east and the arrival of Kukulcan in Yucatan from the west (Landa 1941: 22-23), Ringle and colleagues have noted (1998: 187-188) that other documents suggest that Quetzalcoatl could have arrived from the east, rather than from the Basin of Mexico (Alva Ixtlilxochitl 1975, I: 529-530; de las Casas 1966: 53), making the direction of Quetzalcoatl a matter of controversy. Nonetheless, according to the work of Fray Diego de Landa, *Cuculcan* was a great lord (*un gran señor*) who arrived in Yucatan from the west, reigned in Chichen Itza and later founded the city of Mayapan, where he lived with the lords for some years and then returned to Mexico. '…[A]fter his return he was regarded in Mexico as one of their gods and called Quetzalcouatl*;* and they also considered him a god in Yucatan on account of his being a just statesman…' (Landa 1941: 23).

Ringle and colleagues (1998) interpret representations in the Codex Nutall as depicting the introduction of the cult of Quetzalcoatl to the Mixteca region and correlate these representations in the codex with iconography and architecture of the Epiclassic period in Mesoamerica. In particular, pages 18 and 19 of the codex depict 12 Wind as a priest (whom they identify as Quetzalcoatl) bearing a temple on his back with a pair of twin snakes—interpreted by the authors as a Quetzalcoatl temple. These images (Ringle *et al*. 1998: 185) are said to represent the transportation and foundation of the cult in new locations. 12 Wind and other figures carry objects of ritual importance that the authors associate with the cult: incense pouches, weapons (a shield and three *atlatl* darts), a sacrificial perforator, two ceremonial staffs or banners (identified as Caso's Xipe and Venus staffs), a stick for starting the sacred fire, and a sacred bundle. The placement of the staffs, fire stick and bundle before the temples is understood as marking the founding of the cult in different locations. Interestingly, page 18 includes the representation of 12 Wind making an incense offering with a ladle censer to a serpent which could be a fire serpent, with an I-shaped ball court coming out of its mouth. The serpent, which has a circular, crenelated representation in its body, is depicted on what appears to be a pedestal-based censer[4]. Other important symbols illustrated in the ceremonies that the authors interpret as related to the foundation of the cult are the year sign, a *Tlaloc* pot, the *ollin* and the 'reptile eye' glyphs. According to the authors, this cult iconography can be identified during the Epiclassic in the form of feathered serpents, pouches, weapons (shields and three *atlatl* darts), ceremonial staffs (probably war banners), stepped pyramids dedicated to Quetzalcoatl, I-shaped ballcourts, round structures, chacmools, and calendrical symbols such as the Venus sign, the 'reptile eye' glyph and Casos's glyph A or *ollin* glyph. George J. Bey III (in the same publication), also suggests an association of the cult with four ceramic forms that are part of 'an incensario complex' distributed throughout the hypothesized cult region: a 'frying pan' or ladle censer, open-work censers, spiked hourglass *incensarios*, and *Tlaloc* pots (Ringle *et al*. 1998: 216).

The authors suggest that the religion would have spread upon the establishment of a network of major shrines, often by military means, and would have extended from Morelos and Puebla to the Gulf Coast, western Peten and northern Yucatan, as well as to the southern highlands of Chiapas and Guatemala. Some important centres where the cult would have developed during the Epiclassic would have been Xochicalco, Cacaxtla, Cholula, El Tajin, and Chichen Itza. The cult would have not involved extensive population movements and replacements, and would have spread through mercenaries, pilgrimage, and political alliances. The authors suggest that commercial links may also have been important.

Although Ringle and colleagues acknowledge that feathered-serpent worship has a long history in Mesoamerica pre-dating the Epiclassic period, including places such as Teotihuacan, they suggest that Epiclassic feathered serpents are associated 'with a new complex of traits that mark a change in ideology' (Ringle *et al*. 1998: 193). However, as noted by the authors, the relation between Quetzalcoatl and earlier feathered serpents in Mesoamerica is not clear. It would also seem possible that the ritual paraphernalia depicted in the codex is associated with the foundation of new temples and perhaps new leadership without involving the introduction of a new ideology. Many of the feathered serpents in the Maya area identified as Quetzalcoatl may represent the war or fire serpent which emanates smoke and fire and is associated with rituals of fire and burning incense. Perhaps the name Quetzalcoatl was the name of a lord or lords which referred to an old concept of the feathered serpent which already existed in many parts of Mesoamerica. As Taube (2000) has noted, feather serpents have a long tradition in the Maya area and were not new in Epiclassic times. Moreover, in Classic Maya art, representations of this serpent with a torch or bundle of incense are often associated with the Teotihuacan *Tlaloc* and the Mexican year sign. At Yaxchilan, for instance, Mexican year-sign bundles are common parts of headdresses worn in bloodletting and subsequent fire offering scenes, often accompanied by representations of the war serpent and the Teotihuacan *Tlaloc* (Taube 2000: 272). Thus, much of the imagery represented in the *Codex Nuttall* may already have been present in the Maya area before the Epiclassic period.

---

[4] The representation may refer to the burning of incense in a ladle censer in a ritual conducted to communicate with the supernatural and its subsequent placement within the pedestal-based incense burner.

Based on the idea that representations of Quetzalcoatl and *Cipactli* in the Temple of the Feathered Serpent at Teotihuacan symbolize the 260- and 365- day calendars, and on similar symbolism on other Epiclassic pyramids at sites such as Cholula, Chichen Itza and El Tajin, Ringle and colleagues suggest that Quetzalcoatl may have been one of the deities associated with the invention of the divisions of the year (Ringle *et al.* 1998: 193-194). They also argue that the major Epiclassic cult pyramids were war temples, and they note that in the Maya area, the pairing of Quetzalcoatl and Tlaloc is consistent with what Schele and Freidel (1990) have called Tlaloc-Venus warfare, which first appeared during the Early Classic but experienced a resurgence in the Usumacinta-Pasión drainages in the Late Classic period (Stone 1989). According to Ringle and colleagues (1998: 196) it is only during the Epiclassic that the typical feathered serpents and the 'Mexican' form of the Venus glyph begin to substitute for other Venus imagery, such as the Maya *Lamat* sign (Ringle *et al.* 1998: 195). Nevertheless, as is the case with the concept of the feathered serpent, some ritual elements—including incense pouches, sacred bundles, sacrificial perforators, the Venus sign and specific kinds of architecture (i.e. shrines or temples and ball courts) represented in the Codex Nutall—may not have been components of a new cult but instead widespread Epiclassic elements which were rooted in earlier Mesoamerican traditions.

2.5. CHANGES AND CONTINUITIES SUGGESTED IN THE RITUAL USE OF INCENSE BURNERS

Censers are generally thought to be tied to rituals (Benyo 1979; Cuevas 2004; Ferree 1972; P.M. Rice 1999; Russell 2000; Sabloff 1975; J.E.S. Thompson 1957). As ritual paraphernalia, censers reflect ritual practice. Given this link, my study of censers aims to reveal changes and/or continuities in ritual practices during the end of the Classic and the beginning of the Postclassic periods. It is hypothesised here that if change can be identified in ritual practices, the evidence would suggest social, cultural and/or religious change. Continuity in censer practices or styles, on the other hand, would presumably represent social, cultural and religious continuity.

Changes in the *incensario* complex in the Maya lowlands have been suggested and interpreted as indicative of changes in the religious and/or political organization of Maya society (Proskouriakoff 1955; P.M. Rice 1999; Sabloff 1975). As previously noted, George Bey III associates the presence of ladle censers, openwork censers, and spiked hourglass censers with a cult that would have spread in Mesoamerica during the Epiclassic period. Sabloff (1975) and P.M. Rice (1999) have also argued that the Jaguar God of the Underworld incense burners (as cylinders and/or pedestals), which were so common during the Late Classic period, disappeared during the Terminal Classic period and were replaced by ladle censers or hourglass vases. In this regard, in trying to understand the processes of change at Seibal from *Tepejilote* (early Late Classic) to the *Bayal* phase (dated to the Terminal Classic period, A.D. 830-930), Sabloff wrote:

> It would appear that as the ceremonial locus of the site shifted from Group D to Group A, there also was a shift in religious practices or in the nature of the *incensario* ritual. In other words, the older elaborate flanged cylinders with the sun god heads…and the separate bowls for burning the incense…were replaced by much simpler looking spiked and ladle *incensarios*. These later censers were associated with the Tenth Cycle monuments and fine paste ceramics, and a few of them have forms that resemble Postclassic censers from Tikal and northern Yucatan (Sabloff 1973: 119).

Sabloff, who originally advocated foreign invasion in the Maya southern lowlands as having caused the 'collapse of Maya Civilization' (Sabloff 1973: 108), interpreted these changes in material culture at Seibal as reflecting changes in ritual and religious practices.

Prudence M. Rice (1999: 41-43) instead has suggested that the censers and censer stands with imagery of the Underworld Jaguar/Night Sun god were 'components of a royal funerary cult', on the basis of their iconography and their mortuary contexts of recovery (primarily found in temples which were mortuary monuments and royal tombs). According to Rice, the contexts of the incense burners reflect ritual activities which would have had 'a primary focus on the life cycle of the king, the dynasty, the cosmos and the propitiation of patron deities overseeing that transition'. That is, rituals involving the death and rebirth of the king symbolized the death and rebirth of the Sun and are reflected in the archaeological record as 'termination rituals'. Termination rituals involved the smashing of *incensarios*, accompanied by the cessation of use of temples and their subsequent burial, and the construction of new temples in the places of the old ones (P.M. Rice 1999: 43). The censers would have thus been connected to the Classic period (especially Late Classic divine kingship), as well as state and/or dynastic cults and belief systems and with rituals that involved the sanctity of the king and supernatural patrons of the royal lineage. According to Rice,

> By the Terminal Classic period in the southern lowlands, a time of crisis and 'collapse' of political elites, the earlier elaborate image censers of the royal funerary cult became more simplified and disappeared. Rituals incorporating the burning of incense underwent some transformation and simpler spiked vessels, with a long history of use in residential and/or nondynastic contexts, came to be more widely used, along with ladle censers (P.M. Rice 1999: 43).

The author has suggested that during the Terminal Classic period in the southern Maya lowlands elaborately modelled image censers[5] and censer stands 'abruptly ceased to be used' and ladle censers and spiked hourglass censers were 'adopted' (P.M. Rice 1999: 25).

Later changes in the use of incense burners have also been noted by Proskouriakoff (1955) in the effigy pedestal-based censers from Mayapan, a Postclassic Maya city. Contrasting the centralized state religion of the Maya Classic period, Proskouriakoff (1955: 88) has argued that late in the history of Mayapan, new religious practices were introduced suggesting 'a tendency to worship privately without the intercession of priests'. Proskouriakoff's idea was based on archaeological information recovered from the intensive excavations carried out at Mayapan by the Carnegie Institution of Washington in the 1950s, as well as on a consideration of ethnohistoric records that bespeak the arrival of Kukulcan and the foundation of Mayapan as a new capital. Archaeologically, the interpretation of a more privatized worship was based on the presence of numerous small shrines in the courts of Mayapan's ceremonial center and private houses, and on the deities represented in effigy pedestal-based incense burners. Some of the effigy representations were interpreted as deriving from Maya mythology, others to be linked with deities of the Valley of Mexico, and others likely to be 'patrons of vocations and private ancestral gods'. Proskouriakoff also contrasted a Classic period 'highly organized mystic mythology in which a sky serpent bearing celestial symbols played the central role' with a feathered serpent as the dominant god during the Chichen Itza period. She contrasted both with the numerous gods represented at Mayapan (Proskouriakoff 1955: 87) and saw all of these as reflecting changes in religion. In reference to the incense burners from Mayapan, Proskouriakoff noted that the censers convey the 'inartistic and militant character' of the period 'which contrasts sharply with the scope and serenity of earlier Maya traditions'.

In sum, changes in incense burners have been suggested during the Terminal Classic period and have been associated with broader changes in the religious and/or political organization of Maya society. More specifically, hollow cylindrical stands with flanges and the representation of the Jaguar God of the Underworld are suggested to have ceased to be used during this period. Ladle and spiked hourglass censers are suggested to have been adopted during the Terminal Classic (Rice 1999: 25) and to have replaced the cylinders (Sabloff 1973: 119). This study is partly conducted to test these hypotheses.

With reference to the changes proposed by Proskouriakoff (1955) during the Postclassic period, the representation of new deities on pedestal-based incense burners from Mayapan very likely reflects changes in religious ideology as the author has proposed. The origin of the ideas embodied in the censers is not known. As suggested by Chase and Chase (2004: 21-22), however, the presence of small shrines in the courts of ceremonial centres and private houses, and representations of deities on the censers, do not clearly indicate a privatization of worship. Contrary to the idea of private worship and in reference to the possible different patterns of distribution of incense burners during the Classic and Postclassic periods, Chase and Chase note that during the Late Classic at Caracol, censers are distributed throughout the settlement and were recovered in both the site epicentre and residential areas (A.F. Chase and D.Z. Chase 1996b).

Changes in the nature of religion during the Terminal Classic and Postclassic periods seem well supported, although far from clear. That a new religion based on Quetzalcoatl/Kukulcan would have been founded on the basis of new traits is a possibility to be explored, as is the possible association of specific kinds of incense burners with this or other new world views.

In the following chapters I attempt to address ritual change and continuity at the end of the Classic period and the beginning of the Postclassic. I first examine what anthropologists have written about the nature of ritual and how ritual is connected to broader social aspects of society. I then address ritual and material culture by looking at the role of censers and incense burning in ritual. Following this, my focus is on the censers of my sample that date to the Late Classic, Terminal Classic and Postclassic periods as well as on incense in the hope of discerning trends in continuity and change in rituals. I also look at incense use and patterns of burning in order to learn what can be inferred from archaeological incense burners about the ways in which censers were used in rituals in the past.

---

[5] Image (or effigy) censers are referred to by Rice (1999: 32) as 'modeled and/or molded (and usually also stuccoed or painted) elaborations either comprising the receptacle for burning the incense or attached to or supporting it. These embellishments include anthropomorphic and zoomorphic representations, full-figure or partial-figure effigies, and flanges, and they may be associated with bowl, jars, and vase receptacles'. According to Prudence Rice image censers sometimes may have held or supported other vessels that held offerings other than incense.

3. RITUAL PRACTICES AND MATERIAL CULTURE

3.1. INTRODUCTION

This chapter involves a discussion of rituals as cultural practices that are socially constructed and employ symbols that draw meaning from the social and religious values of a community. Changes in religion and other social aspects of society can be thus expected to be reflected in ritual. Although rituals are not material, it is possible to look at the material culture of ritual to understand changes and continuities in religion and other social aspects of society through time. Censers and incense are material culture of ritual practice, and their use and symbolism can be studied in an attempt to understand changes and continuities in ritual practices.

3.2. A DEFINITION OF RITUAL

In this study, rituals are defined as specific and repetitive actions or events that are based on conventions and symbols which are socially established (*Enciclopaedia Britannica, 1926*). The celebration of a god's birthday in India, the coronation of a king in England, the initiation of a Buddhist monk, a funeral, or the hunting of deer among the Chorti Maya are all examples of practices that involve rituals.

The notion that rituals as behaviour based on convention and symbols are different from other social actions has been criticised (Monaghan 1998: 48). Criticisms have been levelled on the basis that the social world is full of conventions and symbols, and so it would follow that all social actions could be considered ritual acts. The concept of ritual is indeed problematic; nevertheless, some practices are based on more conventions and symbolism than others.

Rituals are practices that 'tend to present themselves as the unchanging, time-honoured customs of an enduring community' (Bell 1997: 210). They are commonly associated with a desire to communicate, to protect life, and to effect change. Functionalist approaches to rituals have also stressed the role of rituals as a device to maintain the social order and equilibrium of a society (Gluckman 1954, 1958).

Rituals mark roles of individuals in society (Gluckman 1962: 35) and can legitimate authority (Fortes 1962). In reference to rituals in tribal societies, Gluckman (1962: 42) argued that rituals 'are built out of the very texture of social relations, each person having to perform symbolical actions, or undergo symbolical operations, which emphasize his role in relation to the other participants in the ceremony'.

Fortes (1962) noted that among the roles that receive special ritualization are those of authority. In addressing the situation of the installation of chiefs in tribal societies, he argued that

> 'Ritual presents office to the individual as the creation and possession of society or a part of society into which he is to be incorporated through the office. Ritual mobilizes incontrovertible authority behind the granting of official office and status and thus guarantees its legitimacy and imposes accountability for its proper exercise' (Fortes 1962: 86).

Rituals can reflect ideas and concepts about the cosmos and social relationships within that cosmos. They can therefore express the roles and status of individuals in society. An important contribution to the meaning of symbols and their relation to aspects of the social organization of a society was made by Victor Turner (1967). Turner explored the complexity of symbols in rituals of the Ndembu people on Zambia and argued that particular elements in ritual may have a complex set of messages which are associated with contexts of power and influence between people. Rituals contain meaningful symbols by which information is revealed and regarded as authoritative and that contain important social and religious values of a community (Turner 1968: 2). Symbols can be objects, activities, words, relationships, events, gestures or spatial units (Turner 1967: 19). Because of the relation of rituals with the supernatural, symbols have the power to act upon people. According to Turner, rituals constitute 'a stereotyped sequence of activities involving gestures, words, and objects, performed in a sequestered place, and designed to influence preternatural entities or forces on behalf of the actor's goals and interests' (Turner 1977: 183). Rituals involve meaningful activity.

Thus, rituals contain important social and religious values of a society, and can reflect roles of individuals and ideas and concepts about the cosmos and social relationships within that cosmos.

3.2.1. Rituals as expressions of experience

An important contribution to the study of ritual was made by the German philosopher Wilhelm Dilthey (1833-1911). Dilthey (1976) highlighted the anthropological importance of experience and expressions for the study of culture. He argued that 'reality only exists for us in the face of consciousness given by inner experience' (Dilthey 1976: 161). Dilthey's understanding of experience encompassed cognitive, affective, and volitional dimensions. In addressing the impossibility of living other people's experiences to study culture, Dilthey argued that we can 'transcend the narrow sphere of experience by interpreting expressions' (Dilthey 1976: 230). By expressions he meant texts, performances, representations, and objectifications.

Dilthey's emphasis on experience and expressions constituted a significant contribution to the development of the anthropology of experience, which was first formulated by Victor Turner (Turner and Bruner 1986). The anthropology of experience focuses on how culture is experienced by individuals and how events are received by consciousness. Turner was interested in life as lived through experience and particularly in performance.

Influenced by Dilthey's understanding of experience as encompassing cognitive, affective, and volitional elements, Turner argued that any 'structure of experience' is composed of different moments in its organization. These moments are: the perceptual core, the evocation of past images, the revival of associated feelings, the emergence of meaning and value, and finally, the expression of experience (Turner 1982: 15). It is only during the last moment of expression that the 'structured unit of experience' revealed itself. While 'meaning is apprehended by looking back over a temporal process' (Turner 1982: 76) and is tied to memory, cognition and coherence, 'value' is associated with the affective structures of experience. Turner argued that a 'structure of experience' in its expression can be crystallized in an intersubjectively accessible form. Rituals, as forms of expression, are socially constructed units of meaning through which important values are expressed (Bruner 1986: 5, 9).

3.2.2. Ritual theory and transition

An important early contribution to the study of ritual practice and its relation to the dynamics of individuals and group life was the work of Van Gennep (1960). Van Gennep identified certain rites that he characterized as *rites de passage*, which accompany every change of place, state, social position and age. By *rites de passage* van Gennep meant rites of 'transition'. The author identified in these rites three major phases based on their content and order: separation (*separation*), transition (*marge*), and incorporation (*agregation*). Different *rites de passage* could differ in their emphasis on different phases. The stage of transition was characterized as a liminal period between two more established states. The author regarded changes in social relations that involve movements between groups or changes in status as disturbances, and suggested that rites of passage are devices used to reduce the effect of these disturbances.

Turner stressed the importance of the liminal in ritual and in combination with Van Gennep's work, introduced the notion of social dramas. Social dramas are a response to the conflicts inherent in societies. They contain three faces: a) a breach in the norm-governed social relationships between people or groups of a social unit, b) a crisis or extension of the breach if it cannot be solved, c) adjustive or redressive mechanisms brought into operation by leading members of a group, and d) reintegration of the disturbed social group or social recognition of an irreparable breach (Turner 1957: 91-94). Turner argued that rituals are meaningful cultural performances and stressed the nature of rituals as processes.

3.2.3. Ritual transformation enacted

Rituals are actions that are performative and emphasise efficacy. They also occur in specific places (Schechner 1994). A special ambience is created in ritual practices with the use of elements such as perfumes, music, noise, lights, and fire. The use of special ritual paraphernalia, vocabulary (Van Gennep 1960: 169) and gestures also enhance this atmosphere as do the presence of objects such as masks or icons (Goodman 1986). Dancing, fasting, abstaining from sleep, the induction of pain, or the consumption of perception-altering substances also contribute to the formation of a special atmosphere. The specific times and places where rituals are conducted may carry special values that further enhance the character of a ritual atmosphere (Rappaport 1999: 33). During rituals, the senses of olfaction, audition, gustation, vision, and touch are commonly stimulated (Howes 1987). The burning of incense in rituals, which is of interest in this book, stimulates the sense of olfaction, and helps in the creation of a special atmosphere during rituals.

A link has been made between auditory and olfactory experiences and situations of transition. Rodney Needham (1967) noted that practices that involve rites of passage such as birth, marriage, funerals and healing are usually associated with the use of percussive instruments. The author suggested a 'quasi universal' association between the use of percussive instruments and states of transition. In a similar manner, David Howes (1987: 410) argued that the experience of smell 'instigates the transition between social categories'.

> '…there is an intrinsic relationship between smell and cognitive transformation at the logical level (smells are most noticeable at boundaries), the psychological level (given the effect of odours on memory and discursive reason), and at the sociological level (smells synchronise the emotional and physical states of the members of a congregation)'.

Howes proposed an association between olfactory experience and communication with the supernatural domain. In a similar way, Needham (1967) proposed an association between the use of percussive instruments and the supernatural. In this regard, the playing of instruments and the smoke from incense in religious rituals mark moments of transition where the presence of the supernatural is felt and communication can be enacted.

3.2.4. Cosmologies as thought and experienced

We perceive and experience the world with all of our senses. The world around us is classified and given meaning through concepts that are derived from different sensory perceptions. Different societies emphasize different sensual perceptions to classify things and make sense of the world (Classen 1994).

In Western society, visual perception plays a very important role in the way we understand and give meaning to the cosmos, and our way of knowing is highly based on what can be seen (Classen 1998). Other societies are known to make sense of the world with an emphasis on other sensory perceptions that can, for instance, include patterns of sounds and movements (Seeger 1994: 686-687), different odours (Classen 1993: 79-105), and different temperatures (Classen 1993: 122-126). It is important to be aware that, while we try to understand people from other societies with our mainly visual sensory models, the worlds of the people we study might not have been classified as much as ours along visual lines.

The Western emphasis on vision has led to a particular interest in the description and interpretation of a society's visual culture (e.g. on the visual designs of artefacts) when searching for 'sensory meanings'. As a result, scholars have overlooked the possible presence of meanings that can be encoded in other sensory systems (Classen 1997: 402-403). Rituals can be imbedded in rich olfactory symbolism. 'Odours can provide knowledge beyond that of the visible world conveying essences hidden to the eye' (Classen 1994: 158). With the study of incense in rituals, we can address how different scents would have been used and experienced in different spaces and by different people. We would be addressing what Steven Patterson (1992: 2) called 'the distinctive sensibilities of a culture'.

3.3. CENSERS AS MATERIAL CULTURE OF RITUAL PRACTICES

At least in some situations, humans engage in social relationships with material things (Gell 1998). Certain objects or other things that are material can be regarded as 'agents' when they are believed to 'cause things to happen':

> '[A]gency can be attributable to persons (or things) who/which are seen as initiating causal sequences of a particular type, that is, events caused by acts of mind or will or intention rather than the mere concatenation of physical events' (Gell 1998: 16).

Gell's definition of agency differs from the ones that characterise agency as the ability to act in particular ways where more than one course of action is possible (Giddens 1984). Following Gell, in this book, things that can cause things to happen—and which have an influence on people's decisions, emotions and behaviour—are considered social agents in the context of the society being studied. They are regarded as part of people's social realm. Rituals are understood as actions embedded in a complex social network of relationships of which different kinds of beings, natural and supernatural, form a part. Maya censers, including some which contain representations of different beings, can express relationships among humans and the supernatural that are expressed in the material culture of rituals.

3.4. THE USE OF INCENSE IN RITUALS

The burning of aromatic substances and the creation of an aromatic smoke has very often been an important aspect of rituals in different societies (Atchley 1909; Casal 1954; Classen 1994: 45-48). Among other things, burning of aromatics has been used as a sacrifice, as a medium through which humans and supernaturals can communicate, as a purificatory devise, and as a way to drive evil spirits away (Casal 1954). The aromatic substances, the vessels in which these are burnt, and the smoke that is produced in them have often been imbued with symbolism. The form and decoration of incense burners, the substances that are burned inside them and the practices associated with them have also commonly been produced and used under proscribed norms.

The use of incense in worship can reflect important aspects of social power and social relationships in society. When used as offerings, aromatic substances and the vessels in which they are burnt can express a relation between the person or people who make the offering and the supernatural beings involved. The type of offering (what it is), the importance of the offering in relation to other offerings used in ritual, to whom and by whom the offering is dedicated, and the spatial and temporal context in which the ritual is performed can all reflect social and political hierarchies and dynamics of a society.

In the following section I present examples of the use of incense in the Hebrew and Roman Catholic traditions, as well as in the Maya tradition. I make no claims to be comprehensive, but it is important to illustrate how incense and its containers can be imbued with symbolism and how the use and manufacture of containers can follow proscribed norms. I also discuss how the use of incense burners in ritual can express aspects of the social dynamics of a society.

3.4.1. Incense in the Jewish tradition

Incense played an important role in religious worship in the Jewish tradition as can be inferred from several passages in the Bible. Incense was used daily in the tabernacle and temple worship of Israel (S. Luke 1:9) and its use was ordained by Yahweh who commanded: 'In every place incense shall be offered unto My name…' (Malachi 1:11). Incense was compounded under definite proscription given by Yahweh:

> 30:34 And the LORD said unto Moses, Take unto thee sweet spices, stacte, and onycha, and galbanum; these

> sweet spices with pure frankincense: of each shall there be a like weight:
>
> 30:35 And you shall make it a perfume, a confection after the art of the apothecary, tempered together, pure and holy:
>
> 30:36 And you shall beat some of it very small, and put of it before the testimony in the tabernacle of the congregation, where I will meet with you: it shall be unto you most holy (Exodus 30: 34-36).

And 'ye shall offer no strange incense thereon…' (Exodus 30:9).

In incense offerings, burning coals were brought in a censer by a priest from the 'altar of burnt offering' and put upon the 'altar of incense' before the oracle. Incense was then sprinkled on the fire (Leviticus 16:12, 13).

The altars of incense were made according to proscribed rules that the Lord gave to Moses (Exodus 30:1-10) and so were the censers which were to be made in brass (Exodus 27:3) and in pure gold (Exodus 25:38) 'after the pattern which was showed to you in the mount' (Exodus 25:39-40). The censers in daily use were made of brass and those used on the day of the Atonement were of gold (Ezekiel 8:11; 2 Chronicles 26:19; Numbers 16:39).

Only the tribe of Levi, who were descendents of Aaron, could burn incense (2 Chronicles 26:18); they were also the guardians for the treasures of the temple (1 Chronicles 6:26:41).

> 26:17 'And Azariah the priest went in after him, and with him fourscore priests of the LORD, that were valiant men;
>
> 26:18 And they withstood Uzziah the king, and said unto him, It appertaineth not unto thee, Uzziah, to burn incense unto the LORD, but to the priests the sons of Aaron, that are consecrated to burn incense…'

The fragrance of incense was associated with Yahweh (Malachi 1:11) in the Hebrew tradition and in later times with Christ (2 Cor 2, 15) in the Roman Catholic tradition. For Roman Catholics, the smoke of incense came to symbolise the prayers of the good Christian which ascend to heaven: 'Let my prayer be set forth in thy sight as the incense' (Psalm 141:2) and in the context of the heavenly temple incense was also connected with the prayers of the saints (Revelation 5:8). Censers in the early Christian tradition were often decorated with biblical scenes as well as representations of important symbolism such as the sign of the cross as can be seen in some of the specimens held at the British Museum (i.e. AN126035001).

The importance of incense is reflected in one of the most important passages in the Bible that refers to the use of incense in worshp after Jesus Christ's birth. From this passage we read that the wise men from the east looked for the guiding star in their search for the place where Jesus Christ lay. When they saw the star that guided them, they rejoiced and came into the house where the young child was with his mother and offered him gifts, gold, frankincense and myrrh (Matthew 2:10-11).

3.4.2. Incense in the Maya area of Mesoamerica

The burning of incense was a widespread ritual practice in Mesoamerica. It was conducted with the aim of communicating with and having an influence on sacred beings, and of receiving favours necessary to survival (Cuevas 2004:14).

The Maya have a long history of use of incense burners and incense that spans Preclassic times to the present. Modern Maya incense consists of plant resins, composites of leaves, bark, aromatic wood chips, and resinous wood, which are used independently or combined. The different types of incense used depend on their botanical source, on what kind of material is obtained from trees or plants based on specific methods of extraction, as well as on its manufacture. Incense burners used today typically comprise pedestal-based containers. A larger variety of incense burners existed in the past, something which will be explored in this book.

Censers and the act of burning incense had meaning and symbolism. In Maya cosmology censers represented concepts of centrality and were used as a means of communication between the world of the living and the supernatural (Taube 1998). Studies on incense burners suggest that spiked censers were associated with the sacred tree (Deal 1982; Freidel *et al*. 1993: 454; Norman 1976: 197) that was regarded as the *axis mundi*, and which is identified in Classic period texts as the *wakah-Chan* which means 'raised-up sky', the tree that was raised at the beginning of creation in order to separate the sky from the earth (Freidel *et al*. 1993). Three-pronged 'incense burners' (Taube 1998: 434-435) and the so called '*incensarios de tres cabezas'* (three head censers) (Pereira 2004: 63-70) are believed to have represented the three hearthstones set on the first day of creation and which in Maya cosmology were also associated with a concept of centrality also representing the *axis mundi*. Zoomorphic effigy incense burners may have also represented stones of this hearth (Taube 1998: 437-438). Some evidence suggests that the old god of fire may have resided in this hearth (Taube 1998: 433). According to Cuevas (2004: 375-391), hollow and tubular cylindrical censer stands with flanges and a central modelled effigy representation are associated with the concept of the *quincunce*, the image of the cosmos with its four directions and its centre. In this model, the solar deity represented as GI in the cylinders is associated with the centre, and in its four variants of GIII is associated with the four directions of the cosmos. These types of censers would have been regarded as cosmic trees through which the deities represented on them could travel through the cosmos and receive the gifts of people. Taube (1998: 433) notes that for the Classic Maya, the hearth is also portrayed as a watery place and frequently fuses with the ceiba tree, or *yax che*, also marking the world centre. Both served as a conduit between the levels of earth, sky, and the underworld.

Not only censers but also incense and its smoke were meaningful and symbolic. That incense had symbolism is suggested archaeologically by the different colours and shapes in which it was made as well as by ethnographic records (McGee 1990: 44; Wisdom 1940: 403). The existence of numerous representations in Maya art depicting the smoke of incense from incense burners in various shapes, some very elaborate, suggests that smoke had meaning and symbolism in the past. This is supported by modern ritual practices. As explained by Ramos Noj, a K'iche *guía espiritual* Maya or *Ajq'ij* 'The smoke of certain incense has a symbolic meaning. In Maya ceremonies, and depending on the type of ceremony, the colour and form have symbolism, for instance, in a curation ceremony if the smoke presents itself in a black colour, this indicates that we are receiving negative signals from the entities that we invoke and if the smoke is white in colour, the answer is positive. If the smoke also presents itself with a spiral form from right to left this indicates a positive answer, but if the spiral goes in opposite direction the answer is negative…' (Ramos Noj, personal communication 2009, translation is mine)[6].

The use of incense in the Maya area is referred to in numerous colonial documents written by Spaniards (Landa 1941; Scholes and Adams 1938) where we learn that it was used in ceremonies for purification purposes, for healing, and as a sacrifice to the gods. In colonial documents, incense burners are sometimes referred to as idols and sometimes as braziers. Tozzer notes that in the Relación de la Villa de Valladolid, for instance, we are told that '[t]hey worshiped some idols made of clay like small jars and pots of sweet basil (with) deformed (*desemejar*) faces made on the outside of them. They burned in these a resin called copal of a strong odor' (Landa 1941:110, note 502). In other cases a distinction is made between braziers and idols. For instance, Fray Diego de Landa wrote 'each idol should have its little brazier' (Landa 1941:161) and later on 'the brazier of the demon (idol)' (Landa 1941:140). The function of the brazier is not so clear and although braziers may have been containers where incense was burned directly in them, in some cases the word may refer to containers used to make fire. Ethnohistoric documents from Central Mexico suggest that the coals from this fire may have been used in ladle censers where incense was burned and later the coals with the incense would have been put into the brazier. Colonial ethnohistoric records from the Maya area contain very little specific information that can be used to learn about the kinds of incense burners used during Colonial times.

The existence of a number of specific forms of censers in pre-Hispanic times—recovered archaeologically and known from various representations in Maya art, each form sharing similar decorative attributes—suggests that incense burners were made in specific ways and that their manufacture may have been carried out under proscribed norms.

Pom and copal (Burceraceae, Pinaceae)? are words that are used in the Maya area to refer to incense. The word *pom* dates to Classic times and was written by the glyphs T687b and T141 (Bricker 1984: 233; Lounsbury 1973: 107). The term copal was adopted by Spanish people from the Aztec Nahuatl word *copalli* and has been used to refer to different trees and their resins (Relación de Mama RY, 1: 56).

A link between *pom* and corn exists in the Maya area and in other areas of Mesoamerica since ancient times. The meaning of this link is not yet clearly understood. The northern Lacandon Maya of lowland Chiapas in Mexico regard *pom* as the principal foodstuff given to the gods. When copal burns, it is believed to transform into *tortillas* that the gods consume (McGee 1990: 44). The Lacandon, Chorti, and Quiche from Chichicastenango are known to model nodules of copal in the form of ears of maize, corncobs or tortillas (Cuevas 2000: 58; Wisdom 1940: 403).

Colonial records also describe the burning of corn ground up with incense in rituals (Landa 1941: 140, see below). The *pom* glyph itself may represent a corncob with its grains cut in section (Cuevas 2000: Fig. 11). According to Cuevas, the placing of corn in cylindrical incense burners with flanges is associated with the continuity of the solar journey and agricultural fecundity (Cuevas 2000: 58). Perhaps an altar of unknown provenience stored in Tikal, which depicts a female person holding a flanged effigy incense burner on which a corncob is represented, illustrates this association. According to Marco Antonio Ramos Noj (personal communication, 2009), the Q'eqchi, mainly from Verapaz and Peten, continue to carry out the '*ritual de bendición del maíz*' (blessing of the corn ritual). The ritual is conducted during the day of Q'anil before planting the seeds. In this ceremony, *pom*, *cuilco*, *incienso*, *candelas*, as well as other materials related to the ceremony are used. Colonial ethnohistoric records from Central Mexico describe the existence of rituals in which corn seeds were smoked with copal before being planted (Ruiz de Alarcón 1988). The practice of incensing corn seeds with copal continues to exist in some areas of Central Mexico, such as in the celebration of the Candelaria Virgin (*Virgen de la Candelaria*) (Montúfar 2004: 69).

Another substance that may have been burned in censers is human blood. Cuevas (Cuevas 2000: 58) has found obsidian blades in direct association with flanged cylindrical censers from Palenque and suggests that blood offerings would have also been made in rituals associated with the censers. A different function of the obsidian blades in this context, however, should also be considered.

There is some evidence suggesting that incense may have been burned in rituals in proscribed forms, perhaps indicated by the priest/s with whom the ritual was conducted. Some evidence also suggests differential use of some kinds of incense. In the following reference by Fray Diego de Landa (1941: 140), for instance, incense together with forty-nine grains of corn was burned in a 'brazier'. The reference also suggests that the lords may have used a specific kind of incense. During the five unlucky days before the New Year, there was a ceremony in which the Maya made a hollow figure of a god called Kan u Uayeyab to whom they offered incense:

---

[6] The explanation in Spanish was: 'El humo de determinados inciensos tiene significado simbólico. En las ceremonias mayas, y dependiendo del tipo de ceremonia, el color y la forma tiene un simbolismo, por ejemplo en una ceremonia de curación si el humo se presenta de color negro, esto indica que estamos recibiendo señales negativas de las entidades que invocamos y si el humo es de color blanco, la respuesta es positiva. Si el humo también presenta la forma de espiral de derecha a izquierda esto indica que la respuesta es positiva, pero si la espiral es de forma contraria la respuesta es negativa. En cuanto al tipo de incienso, eso dependerá del tipo de ceremonia que se haga' (Ramos Noj, personal communication 2009).

> 'the priest incensed it with forty-nine grains of maize ground up with their incense, and they distributed it in the brazier of the idol and perfumed him. They call the ground maize alone *sacah* and [that] of the Lords *chahalte*' (Landa 1941: 140).

In a later passage referring to the same ceremony, but in a different year, Landa refers to *sacah* as a mixture of incense and fifty-three grains of maize and writes that the nobles were given by the priest *chahalte* incense to put in a brazier

> '[O]n arriving there, the priest perfumed it [Chak u Uayeyab] with fifty-three grains of ground maize and with their incense, which they call *sacah*. The priest also gave to the nobles more incense of the kind we call *chahalte*, to put in the brazier…' (Landa 1941: 144).

Tozzer notes in the work of Landa (1941) that Redfield and Villa (1939) define *sacah* as shelled corn cooked without lime, ground and made into balls. They argue that *sacah* 'is the form in which maize is customarily offered to non-Christian gods and spirits'. Roys writes the word *chahalte* by Landa as *ch'hjalte*, from *ch'ahal*, associating it with the etymological derivation from *ch'ajal*, meaning 'drops' of incense. Ch'aj is the Yucatek word for 'drops' and the Cholan word for 'incense' (Love 1987). During the Classic period, the glyph (T93) that reads *ch'aj* was one of the glyphs that referred to incense. The glyph sometimes appears together with T710 *chok*, which is the hand scattering glyph that refers to the 'scattering or sprinkling of incense' (Bricker 1984: 233-234, 1986, Fig. 17). Whatever the nature of *sacah*, *chahalte* seems to have been referred to by Landa as a kind of incense associated with the lords and as different from *sacah*. The possibility that during the Classic period *ch'aj* was incense used or associated with the nobility is a matter that needs to be studied.

In addition, and as noted by Walter Hough, different varieties of incense may have been used for different deities (Hough 1887: 132, 133). In reference to the association of incense with specific deities in Central Mexico, Sahagún wrote that *chapopotli* was bitumen used to worship the god Huitzilopochtli (Bancroft 1867: 702). More recently, a study of *yauhtli* has revealed an association of this aromatic plant that was sometimes used as incense with Tlaloc (Sierra 2000). The differential use of incense by people and for different supernaturals in the Maya area and other areas of Mesoamerica remains to be investigated.

3.5. CONCLUSION

Rituals are actions or events that are based on conventions and meaningful symbols which are socially established and which reflect the social and religious values of a society. Rituals convey concepts and ideas about the cosmos. As forms of expressions that contain symbols, rituals may convey messages associated with the roles of individuals and with contexts of power and influence. They therefore can express the social dynamics of a society.

Censers and the incense burned in them can be part of the material culture of rituals as exemplified in reference to Judaism, early Christianism and among the Maya. Both have been produced and used in specific ways in rituals, sometimes under proscribed norms, and have commonly been imbued with symbolism. In the study of incense and incense burners archaeologists may expect symbolism, or sets of meanings, to be imbued in the incense being burned (its scent), in its smoke (visual) (e.g. colour and form) as well as in the form and decoration of the container in which incense is burnt. How the smoke leaves a container may also have meaning. Meaning can also be expressed in the activities in which different types of incense and incense burners were used.

The following can be considered important for the understanding of the use of incense and incense burners in rituals in the past:

- The incense itself; the particular type, and its purpose
- The associated container and its function (e.g. how it held the incense may have regulated the way the incense burned and the smoke escaped in the ceremony)
- The iconography, decoration or style of the container and its significance
- Where the censer and its burning contents were used (context)
- Who used the censer or benefited from burning the incense

By understanding the activities in which different types of incense and incense burners were used, how, by whom and for what purposes they may have been used, we can address aspects of Maya social organization. It can also be argued that changes in the material culture of rituals (censers and incense) through time can be linked to social changes in society.

4. PREVIOUS STUDIES OF CENSERS IN THE MAYA LOWLANDS

The aim of this chapter is to discuss previous work on censers in order to place my research in context. As will be discussed below, a number of specialized studies of censers from the Maya lowlands have been conducted. Some are based on the complete censer collection of an archaeological site involving the occupation periods of the site from which the censers were dated. Other studies specialize in a specific kind of censer form from a site and address the period or periods in which these censers were used. Two other studies, like mine, are based on the study of censers from various sites in a specific area and address a specific period or periods that have been of interest to the archaeologist.

Among the most common questions addressed in studies of incense burners are: (a) the function of the censers as containers used to burn incense (b) the use of censers in rituals with an attempt to understand specific ritual activities from the contexts of recovery of the censers with the aid of information from ethnohistoric documents, ethnographic analogy, iconography, and information from epigraphic texts that refer to the use of censers in rituals (c) the iconography of censers (as represented in the vessels), in order to understand their symbolism (d) changes and continuities in form, decoration, manufacture, and contexts of recovery through time in order to understand broader social aspects of society through time, and (e) the distribution of the censers, more specifically, their association with different kinds of structures (i.e. domestic or ceremonial) as well as with specific areas of sites in order to address spheres of use of the censers by different people, and perhaps for different purposes.

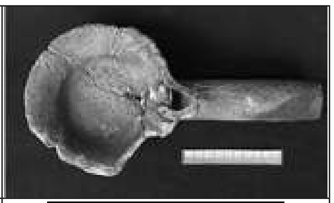
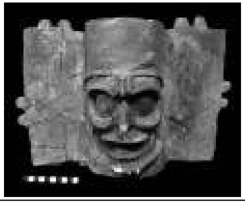
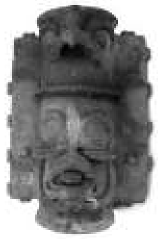
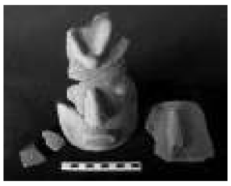
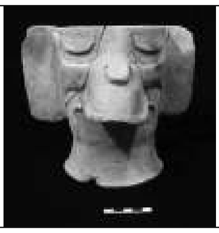
For many years censers in the Maya lowlands have been classified according to a type-variety system used for ceramics, which emphasized attributes of surface finish and paste (e.g. Adams 1971, Sabloff 1975, and R.E. Smith 1955, 1971). This approach subsumes the study of censers under broader, site-oriented ceramic studies focused on overall ceramic chronology[7]. The specialized studies that have been conducted on censers and that are addressed in this chapter have treated censers differently and separately from other ceramics, emphasizing and classifying the censers according to their formal attributes, and thus, allowing archaeologists to address social aspects of Maya society more effectively. See Tables 1 and 2 as an example of the classification in this study of censers and other vessels possibly used as incense burners on the basis of form and decoration, as well as a general reference for the identification of some of the vessels that have been referred to in the literature as incense burners.

One of the first studies on censers from the Maya lowlands was conducted by J. Eric. S. Thompson (1957). The principal aim of Thompson's study was to identify the deities portrayed on a sample of Postclassic effigy pedestal-based censers from the site of Mayapan in order to better understand the effects of Mexican influences on Maya religion. The study has an emphasis on the formal and representational attributes of the censers and their interpretation, and includes a discussion of the function of the censers and the structures and areas where specific censer effigies were found. Thompson also addresses some of the ritual activities that may have been responsible for the deposits of effigy pedestal-based censers recovered from Mayapan and argues that the deposits of large numbers of effigy censer sherds may be connected with the renewal of the idols of clay and the braziers recorded by Landa (Landa 1941: 161). He notes that renewal rites using effigy censers have survived in modern times among the Lacandon (Tozzer 1907: 105-47). In regards to the identification of the deities represented in the censers, Thompson argues that five deities can be identified with certainty or tentatively as of non-Maya origin: Xipe, Tlazolteotl, the Venus god, a god or group of gods of merchants and possibly the deity whose face is divided vertically into a naturalistic side and another side that shows the features of a skull. Thompson suggests changes in religious practice during the Postclassic period stressing 'the importance of the rise of the family oratory as a rival to the communal center of worship' (J.E.S. Thomson 1957: 16; see also D.E. Thompson and J.E.S. Thompson 1955: 238-42). He suggests that in the Postclassic there was 'a change in religious habits (…) that led to a great increase in the use of the effigy censer and to a marked development of portraiture of individual gods' (Thomspon

---

[7] Only more recently, type-variety systems include some modal aspects of ceramics.

Table 1 Different kinds of censers as classified in this study

Ladle censer	Container with a tubular handle attached to it. The handle can be solid or hollow. These censers can be plain or decorated with spikes, may be painted, and may have a modelled representation in the handle's distal end.	
Hollow cylindrical censer stand with flanges and a central modelled effigy representation	Hollow cylindrical base with flanges and a central modelled effigy representation that was part of a composite censer on top of which a vessel was placed for burning incense.	
Tubular cylindrical stand (or container?) with flanges, a solid base, and a central modelled effigy representation	Cylindrical stand (or container?) with flanges, a solid base, and the central representation of an effigy.	
Vase with an effigy face	Container with the representation of a human or jaguar face.	
Pedestal-based censer	Vessel with an attached pedestal used to burn incense. Can be decorated or plain.	

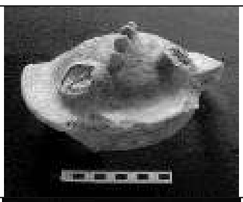
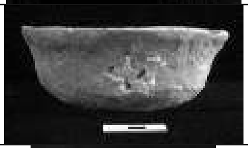
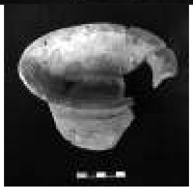
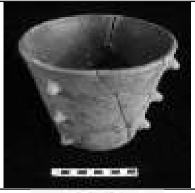
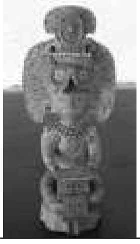
1957: 16). According to Thompson the large quantity of these censers and their production are indicative 'of the rise of secular forces at the expense of sacerdotal control' (J.E.S. Thompson 1957: 16). He concludes

> …[T]his study of effigy censers confirms sixteenth-century accounts of the strong Mexican influences at Mayapan, and increases the number of Mexican deities now known to have been worshiped in Yucatan. There are hints, however, that these alien cults reflect the outlook of a small governing class, urban and somewhat foreign in outlook, who extended these non-Maya elements at the expense of the local religion, particularly the dominant worship of the Chacs, the gods of the great mass of agriculturalists. Indeed, resentment against the preferment of such origin cults at the expense of the well loved local gods of the soil may have been a factor in the revolt that lead to the fall of Mayapan. At least, it could have been a good rallying cry (J.E.S. Thompson 1957: 16).

Another important contribution is Ferree's study of censers from Tikal and Uolantun (1972). The collection on which the study is based involves censers dated to the Late Preclassic through the Terminal Classic. Some Postclassic materials were included that were believed by the author not to be a continuation of the sequence. Ferree's research also involves a departure from the type-variety approach and emphasises the shape of the censers, which, according to the author, is 'the most variable aspect of the material' (Ferree 1972: iii). Ferree argues that a classification based on surface finish, decoration, and paste attributes cannot be suitable for censers, since these attributes are moderately variable and/or non-universal among censers. According to the author, censers are 'one of the pottery forms least satisfactorily handled by a system designed (or primarily employed) to elicit information from decorated vessel sherds' (Ferree 1972: iv). Thus, she presents a classification scheme of the censers based on their form and decoration, and creates a system of ceramic complexes for incense burners different from the complexes that have been elaborated for other ceramics from the site. Her complexes were created in order to give 'analytical justice to censers as censers and … [to follow] closely the long and varied development of censers at a major site', an arrangement that would produce its own perspective on the development of Tikal (Ferree 1972: 195).

In discussing the development of censers at Tikal and Uolantun, Ferree notes, among other things, that pedestal

Table 2 Different kinds of censers as classified in this study

Three-pronged support	Pedestal with vertical to slightly out-flaring walls, the top of which consists of an outflaring base with three prongs.	
Container with outfaring walls	Container with outflaring walls that can be plain or decorated (i.e. with spikes and/or perforations of different shapes)	
Vessel with high walls and an everted rim	Container with high walls and an everted rim	
Spiked 'bucket'- like vessel with flared walls	Spiked container with flared walls in the form of a bucket. Spikes may be heavily applied or not, and may occur in groups forming patterns	
Seated-effigy cover	Lid with a seated male figure which was placed on top of a pedestal-based censer	

supports constitute a shape element that is in use along all the censer sequence, and that appliquéd spikes, although not continuously in evidence, are recurrent throughout the sequence. In reference to the Early Classic period, Ferree argues that it was a time of extra-regional influence on Tikal, specifically referring to influences from Teotihuacan in Mexico and Kaminaljuyu in Guatemala. According to Ferree, during the latter part of this period, hourglass vessels and effigy covers were introduced at Tikal. These types had their origin in Teotihuacan, but were at least partly conveyed via, and modified in, the Guatemala highlands (Ferree 1972: 198). According to Ferree, flanged cylinders with effigy masks were also used in this time in the Maya lowlands, possibly as a modified version of pronged-masked censers from the Guatemala highlands. Ferree suggests that by the end of the Early Classic period, censer development at Tikal went through an active and experimental period which was followed during the latter part of the Late Classic by a refinement of the forms developed, specifically referring to flanged cylinders with a mask, hourglasses, and effigy covers (Ferree 1972: 199). The 'degree of novelty' of Late Classic effigy censers constitutes an important change in the censer sequence of Tikal that, according to the author, is less demonstrable in other artefacts of the site. The Terminal Classic is regarded by Ferree as a time of decline, in which evidence of foreign occupation is slight, and in censers it is only possibly manifested in effigy ladle censers used by occupants of a Central Acropolis that was already deteriorating (Ferree 1972: 200-201). According to Ferree, by the end of this period, Tikal was virtually not populated, and the only censers identified by her from this time are a few ladle and 'chalice' censers.

Ferree's study also includes a presentation of the contexts of activity of the censers from Tikal and Uolantun by period, based on their structural and other associations. After presenting this information, she addresses the 'circumstances of censer use': she refers to some of these contexts and discusses the ritual activities that may have produced them. In reference to the deposits found in front or at the base of temples, Ferree supports the idea that they were part of one activity that involved incense burning, censer breakage, and temple destruction followed by burial of the remains, with the construction of a new plaza floor or superimposed temple. By the Late Classic period, following W.R. Coe (1962: 494-5), and in reference to the censers found in temples and around stelae within temples, Ferree suggests an activity that involved the removal of a stela from in front of the temple, its transportation to the temple rooms, and its interment in a floor pit or altar. The activity would have included much burning and the breaking and scattering of censers around the stela or altar. While some censer fragments would have been left in situ, others would have been buried in floor pits. These activities would mark the end of the normal use of the temple, which may have been followed by the construction of a superimposed temple (Ferree 1972: 14). She also notes that during the Terminal Classic period, censers were used in association with plain stelae, small platforms, and a low, temple-like structure. They also occurred domestically in and around centrally located range-type structures in the Central Acropolis. Censers may also have been associated with burials at the foot of temple stairways. Ferree notes that the activities related to these contexts took place at or near ground level, and suggests that censer activities in temple buildings may have ceased during the Terminal Classic period. According to Ferree, the number of censers in deposits increases during this period and the quality of censers decreases, which suggests an increase in the number of producers, and that rituals were more frequent than before, or that more people were involved in the burning of incense (Ferree 1972: 16-17). Ferree concludes:

> The general impression created by all of this is that, in the Terminal Classic period, ritual activity (certainly the part involving censers) had passed out of the hands of those fully conversant with its Classic formulae, and into the hands of people who, however vague or inaccurate their knowledge of those formulae might have been, nevertheless persisted for a time in maintaining them in their own fashion (Ferree 1972: 17).

Julia C. Benyo (1979) conducted another important study on the pottery censers of Quiriguá. In this study, the author also treats censers apart from other ceramics and artefacts and notes the limitations of using a classification system largely based on attributes of surface finish and paste for the censers. Benyo used a system of ‘attributes’ of form and decoration to define six major classes of censers: three-pronged censers, scored censer lids, spiked censers, ladle censers, effigy censers[8], and thumbnail-impressed fillet censers, noting that three-pronged censers and scored censer lids may be two parts of one censer form class (Benyo 1979: 13, 14). The collection studied by Benyo involves censers dated to all periods of occupation of the site spanning the Middle to the Terminal Classic period (ca. A.D. 550-850). The dates of the censers are presented in terms of the phases of the site’s occupation, designed primarily by construction stages defined for the Acropolis of the site. Thus, the censers were dated according to four construction stages: from CS4 which is the earliest known stage (Middle Classic period) to CS1, which is the latest (Terminal Classic period). Censer materials from areas outside the Acropolis were dated on the basis of stylistic and ceramic comparisons to materials from the Acropolis (Benyo 1979: 34).

Benyo’s work involves a temporal and spatial distribution of the censers classified by form with a discussion of some of the social implications or significance of the patterns obtained by these distributions. In this regard, Benyo notes some differences between the censers recovered from the Acropolis and the Great Plaza from the time when the Great Plaza was likely to be constructed onwards. Whereas the censer material from the Acropolis consists of three-pronged censers, scored censer lids, spiked censers and ladle censers (the first two being represented in great abundance), the censers from the Great Plaza consist of a lesser amount of three-pronged censers and scored censer lids that gradually stop being represented, spiked censers, ladle censers, and especially, effigy censers. Benyo hypothesises that three-pronged censers and scored censer lids were used in private or domestic contexts and suggests that the abundance of these materials in the Acropolis, may indicate that the Acropolis was a more domestic and residential zone than the Great Plaza, which had a lesser amount of these materials. The author notes that architectural attributes of the Acropolis also suggest the primarily residential nature of this area (Sharer 1978: 60). Based on the comparatively reduced amount of three-pronged censers and censer lids in the Great Plaza and the presence of effigy censers in this area, the author suggests that the Plaza may have functioned as a public area where ceremonial activity would have predominated, a function that would have increased through time (Benyo 1979: 52-55). The spatial and temporal distribution of censers from peripheral areas are also discussed, and in this regard, the author suggests that the presence of three-pronged censers, scored censer lids, spiked censers and effigy censers in quadrangles and *plazuela* groups located in peripheral areas of Quiriguá may suggest that these sites could have been residential/administrative centres ‘set up by the elite managerial class’ and sometimes used as secondary ceremonial centres (Benyo 1979: 55-62).

More recently, Russell (2000) conducted a study of the form, function and symbolism of Late Postclassic pottery censers from various sites in the Maya lowlands. His study includes comments on the distribution of particular censer forms as well as a description of the contexts and contents of censer deposits by site with a general and brief comment on some of the patterns detected from those deposits.

Another very important study of censers was conducted by Martha Cuevas (2004). Her study is based on a sample of nearly one hundred flanged effigy cylindrical stands from structures in the Group of the Cross at the site of Palenque. Cuevas’s research involves a study of formal, decorative, and functional attributes of the censers as well as their contexts of recovery with the principal aim of ‘reconstructing the causes that led to the deposits of incense burners’ within the structures. Based on an analysis of style, iconography, manufacturing techniques, provenience, and epigraphic texts, Cuevas (2004: 360-361) dates the censers from Palenque to A.D. 500-850. For this evaluation, the author considers two chronological parameters: A.D. 500-600 is assigned to the censers from Palenque that are similar to the censers dated to the Tzakol period in Peten; and A.D. 770 to 850 is assigned to censers found on the floors of temples during the last occupation of the city.

Martha Cuevas emphasises the ritual nature of the archaeological contexts in which the censers were found (Cuevas 2004: 331-338). First, she proposes the existence of two different kinds of ritual contexts. One of these is associated with the Temple of the Cross, the Temple of the Foliated Cross, and the Temple of the Sun in which cylinders with a central mask of GI and GIII were intentionally buried. Based on epigraphic texts, iconography, and architectural attributes, the Temple of the Cross was dedicated to GI, the Temple of the Foliated Cross to GII and the Temple of the Sun to GIII. According to Cuevas, the censers found in these three temples would have been part of ceremonies associated with the veneration of the Triad deities of Palenque, who would have been patrons of the elites and important in sustaining their power. The censers would have been part of the religious paraphernalia of the elites. A different kind of ritual context is associated with Temples XIV and XV where mainly cylinders with a central anthropomorphic mask were found. According to Cuevas, this context would have been associated with the veneration of ancestors.

---

[8] This category is based on fragments of modelled effigies classed as censers. The sample includes earplug fragments, eye fragments, noses, limbs, hands, feet, full heads, twisted cord motifs, flanges and adornos. Some fragments exhibit evidence of burning and all fragments have evidence of having been applied onto another pottery surface (Benyo 1979: 28-31).

Cuevas (2004: 338-391) notes that the censers found in temples in Palenque were recovered from two specific locations: on the surface of the floors of different temples in the civic-ceremonial centre, and buried within the structures in the Group of the Cross. The two contexts would have involved different phases of the use of the censers. The censers that were buried in the Temples of the Cross, the Foliated Cross and the Sun would have been deposited as a result of a periodical ritual practice of renovation of incense burners or '*ritual de renovación*' once the censers had concluded their use cycle. The ritual would have involved a process of elaboration of new incense burners and the dismissal of the censers that would be substituted by new ones in a cycle that involved the birth, death and rebirth of the censers. The deposit of incense burners found on the floors of the temples, on the other hand, would represent a phase when the censers were used. The deposit of censers within the platforms of the substructures of the temples and under the floor of the plaza would thus represent the interment and conclusion of the life cycle of the censers conducted as a result of the ceremonies of renovation of the censers by the end of each *Katun*. This proposal is based on the contexts of recovery of the censers, on ethnographic analogy, and on information interpreted from epigraphic texts.

Cuevas (2004: 375-391) identified in the censers four variants of GIII in the form of two pairs of deities: the two paddling gods, known as *Remero Jaguar* and *Remero Espina Mantarraya*, and *Xook/Jaguar* and *Imix/Serpiente*. The four variants of GIII together with GI are associated by Cuevas with the cosmological concept of the *quincunce*, the image of the cosmos with its four directions and its centre, in which GI is associated with the centre and the four variants of GIII are associated with the four directions of the cosmos. The solar deity, represented by GI and the four variants of GIII relate to the solar journey through the cosmos. Based on their form and iconography, the censers would have been regarded as cosmic trees through which the deities represented on them could travel through the cosmos and could receive the gifts of people.

4.1. THE DESIGN OF THIS STUDY

In an attempt to build on the studies that have been conducted in the past, and with a particular interest in addressing the use of incense burners in rituals during the transition from the Classic to the Postclassic period, I chose to study a sample of materials from different sites in an area of the Maya lowlands encompassing all kinds of incense burners. This strategy seemed best designed to explore changes and continuities in the use of these vessels in ritual practice during the end of the Classic period and the beginning of the Postclassic. My expectation was that the inclusion of materials from more than one site would allow me to use a large number of materials with good archaeological contexts dated with a high degree of confidence.

It was hoped that the sample would also be useful in helping me identify associations of specific kinds of censers with specific ritual contexts through time, which would allow me to identify specific ritual practices. My approach would also provide evidence of contemporaneous use of certain vessels found in association, which might help me test some of the hypotheses that have been proposed regarding the replacement of specific kinds of incense burners by others at the end of the Classic period. In addition, the inter-regional nature of the sample could also potentially reveal differences and/or similarities in aspects of local ritual practice and religion across the area by a consideration of attributes in the form, manufacture, contexts of recovery and function of the censers.

As in other studies of incense burners, this research addresses the function of the vessels, their use in rituals inferred from the contexts of recovery with an attempt to contribute to our understanding of ritual practices and changes and continuities in the form, decoration, and manufacture of the vessels through time. Better knowledge of changes in ritual practices would contribute to a better understanding of broader social aspects of society through time, and to what we know about the distribution of the censers in particular structures and areas of sites.

Burning patterns in incense burners had not been explored in previous studies, yet they are important in distinguishing incense burners from other vessels and also help us to understand the use of censers in ritual practices and sometimes the kind of incense used. Therefore my study includes a chapter that focuses on burning patterns associated with the burning of incense.

The relation between censers and incense has not been addressed in previous studies. I therefore explore, in one of my chapters, the use of incense in the Maya area in modern times as well as in the past, using comparisons of incense from Central Mexico. My intention is to understand changes and continuities in the use of incense in the Maya area through time in a broader Mesoamerican context. In the next chapter I discuss in more detail the methodology used in my research.

5. THE CENSER SAMPLE: RESEARCH METHODOLOGY

As I noted in Chapter 4, my research on incense burners builds on prior studies and focuses on practice. The questions addressed in this study, therefore, concern the ways in which we can learn from censers about ritual behaviour. Therefore, the contexts of recovery of the censers are as important as the censers themselves.

5.1. RESEARCH QUESTIONS

In order to address aspects of context and use, my research is geared towards answering the following questions:

a) Which ceramic vessels were used as incense burners?

b) How were incense burners used and what was burned in them?

c) In what kinds of contexts do the censers occur and in association with what other materials?

d) What is the chronology of the censers and what can it tell us about continuities and discontinuities in the manufacture and use of the censers through time?

e) What is the spatial distribution of the censers? More specifically, in what structures do censers appear and in what areas of the sites?

5.2. THE SAMPLE

My study is based on the incense burner collections of the following archaeological projects in Guatemala: Proyecto Atlas Arqueológico de Guatemala, Proyecto Arqueológico Regional Petexbatun, Proyecto Yaxhá-Nakum-Naranjo, Proyecto La Joyanca – Petén Noroccidente, Tikal Project, Proyecto Nacional Tikal, and Proyecto Templo V. It also includes materials held at the Museo Nacional de Arqueología y Etnología in Guatemala which were excavated by the Proyecto Piedras Negras and the Proyecto Aguateca, as well as materials excavated at Altar de Sacrificios by Harvard University (see Table 3). The sample from these projects and sites includes Late Classic and Terminal Classic materials, and a few Postclassic examples. The sample was selected because the Peten is believed to be the centre of the 'collapse' phenomenon. It is therefore of central importance in studying Late to Terminal Classic trends. Although I include some Postclassic material in this work, in my future research I plan to study censers from sites that have a substantial early Postclassic component.

In addition, my research includes a smaller sample of incense and incense burner material from various Guatemalan, Belizean, and Mexican sites in the Maya lowlands recorded in four museums: The British Museum in the United Kingdom, the Peabody Museum of Harvard University, the Peabody Museum of Natural History of Yale University, and the University of Pennsylvania Museum of Archaeology and Anthropology in the United States of America.

The materials selected for the analyses conducted in this study were recovered from archaeological sites of different sizes. They derive from central and peripheral areas of sites, and from ceremonial and residential architectural groups. The completeness of the censer materials used in this study varies and ranges from complete vessels to small sherds. Depending on the type of analysis conducted, materials from primary contexts or both from primary and some secondary contexts of recovery were included.

Despite the broad range of proveniences of the materials in the sample, which can be considered to be a positive aspect in this study, the use of materials from more than one archaeological project generated problems of comparability of the data recovered by projects with different aims. The material in the sample derives from very different kinds of excavations. Thus, for instance, the censer material from the Atlas Arqueológico de Guatemala involved mostly surface collections whereas the other materials were recovered by projects which generally involved extensive excavations of structures within sites. The type of excavations conducted influenced the identification of deposits and the types of deposits. The criteria for collecting and keeping censer materials likewise differed among the different projects. No solution was found to overcome these limitations other than to make it clear that these differences exist, and to include awareness of such differences in any hypothesis put forward regarding the censers and censer use.

Table 3 Archaeological projects in Guatemala under which the studied collections were excavated and sites where the censer material was recovered

Project collections and number of materials from all periods recorded for each project (including fragments, incomplete, semi-complete, and complete specimens)	**Sites from which the censer material was recovered**
Proyecto Atlas Arqueológico de Guatemala (N=513)	Various sites in southeastern Peten (Ixkun, Mopan 3-Este, Ixtonton, Ixkol, Ix Ek', Aktun Ak'Ab, Yaltutu, Xa'an Arriba, Xa'an Abajo, Calzada Mopan, Secoyob, Pueblito, Chinchila, Curucuitz, El Rosario 2, Sacul 1, El Chapayal, Sacul 1, Sacul 4, Santa Cruz 1, Ixtutz, El Rosario 3, El Bombillo 1, Moquena, El Rosario 1, Canahui, El Muxanal, Suk Che' San Miguel, El Tigrillo, Canija, Los Lagartos, El Eden 2, El Calabazal 3, Ucanal, El Naranjal, Maringa 2, El Cartucho, Xan, El Bucute, Jinaya, Yaltutu, Palestina, Machaquila, Los Reyes, Limones)
Proyecto Arqueológico Regional Petexbatun (N=135)	Tamarindito, Dos Pilas, Aguateca
Proyecto Yaxhá-Nakum-Naranjo (N=130)	Yaxhá
Proyecto La Joyanca-Petén Noroccidente (N=207)	La Joyanca
Proyecto Nacional Tikal (N=7)	Tikal
Tikal Project (University of Pennsylvania) (N=483)	Tikal and Uolantun
Proyecto Templo V (N=7)	Tikal
Selected materials stored at the Museo Nacional de Arqueología y Etnología in Guatemala including some excavated by the Proyecto Piedras Negras (N=4), the Proyecto Aguateca (N=3), and Altar de Sacrificios (N=8)	Piedras Negras, Aguateca, Altar de Sacrificios, Uaxactun, Topoxte

5.3. THE FIELD RESEARCH

Fieldwork consisted of three, two-month seasons conducted between 2003 and 2006. The first season was carried out during the months of July and August 2004 with the purpose of searching for incense burner collections in Mexico and Guatemala that would be suitable for my study. The project required a large enough sample of materials with good archaeological contexts of recovery from a specific geographical area, and from the time periods addressed in this study. Among the censer collections visited in Mexico during the first season where those from the site of Champoton excavated by the Proyecto Arqueológico Champoton and the site of Acanmul, excavated by the Proyecto Acanmul, both sites located in the Mexican State of Campeche. I also visited the censer collections held in the Museo Arqueológico de Campeche, the Museo Fuerte San Miguel, in Campeche, as well as the Museo Regional de Antropología Carlos Pellicer, in Villahermosa, Tabasco, and the Museo de la Isla de Cozumel in Cozumel Island off the eastern Yucatan Coast. In Guatemala, I looked at materials held at the Museo Nacional de Arqueología y Etnología, the Ceramoteca of the IDAEH (Instituto de Antropología e Historia), and the censer collection of the Proyecto Atlas Arqueológico de Guatemala. By the end of the season I decided that the study could be carried out with censer collections from the Maya lowlands of Peten in Guatemala given the quantity and availability of data from good archaeological contexts, the temporal range of the materials, and the support and advice I received from the directors of the projects I had contacted in Guatemala. I requested permission from the IDAEH to study the censer collections from the projects in Guatemala selected for this study, including access to materials held in the Museo Nacional de Arqueología y Etnología, and the Ceramoteca and Salon 3 of the IDAEH, and permission was granted.

The second field season was conducted in June and July 2005 and the third season in February and March 2006. During these two seasons formal, functional and decorative attributes of incense burners from the collections selected for this study were recorded in the form of photographs and notes that were entered into a database. In addition, information about the contexts of the incense burner materials was collected. The nomenclature of the provenience of the materials was entered into the database in the field. Other information about the contexts of the censer materials was collected from the projects and from libraries in Guatemala and copied onto compact disks or paper, or kept in the form of reports, articles, and books that were later brought to England.

Also during the second and third seasons, twenty archaeological samples of organic residues taken from the inner surfaces of incense burners or otherwise identified by excavators as copal were collected to be brought to England to be chemically analyzed by Dr. Brendan Derham at the University of Newcastle. During the first, second and third seasons, three markets in the Maya area were visited with the purpose of collecting modern samples of incense to be compared with the ancient samples. These were: the markets of Santa Elena in Peten, Guatemala; La Antigua in the Sacatepéquez Department, located in the highlands of Guatemala, and Pino Suárez in Villahermosa, Tabasco, Mexico.

As previously mentioned, fieldwork outside Mexico and Guatemala consisted of visits to the following museums where incense and incense burner materials from the Maya area were recorded: The British Museum in the United Kingdom, the Peabody Museum of Harvard University, the Peabody Museum of Natural History of Yale University, and the University of Pennsylvania Museum of Archaeology and Anthropology in the United States of America.

5.4. THE TYPES OF ANALYSIS CONDUCTED IN THIS STUDY

5.4.1. Formal analysis

The formal analysis consisted of a study of the individual properties of censers which relate to each censer's form, function, and decoration. Attributes of the shape, componential structure, and function of the vessels were recorded and considered in order to explore aspects related to the use of incense burners and associations among different types of incense burners and their contexts of recovery.

5.4.2. Contextual analysis

Given the nature of the vessels as ritual objects and the nature of rituals as repeated actions that are commonly conducted at specific times and places, it was hypothesised that if particular types of censers were used in different types of rituals, the use of different kinds of vessels would be associated with specific contexts. It was expected that this might be reflected in the archaeological record in the form of associations of different types of censers with specific archaeological contexts, in the cases where materials found in primary contexts were considered. The primary contexts of recovery considered here as a product of a voluntary deposition, however, could encompass any of the places where the vessels were used during their use lives. Any clear patterns in the form of associations of specific types of censers with specific archaeological contexts could help to identify the use of different kinds of censers in different activities. Censers with contexts which were not interpreted as the product of a voluntary deposition were not included in the contextual analysis (i.e. from mixed or disturbed contexts).

5.4.3. Distributional analysis

An analysis of the general distribution of the censers found in particular structures and areas within sites was conducted as it was expected that the study could shed light on who used or patronized the activities involving specific kinds of censers as well as on the subjects for whom incense was burnt.

5.4.4 Archaeological organic residue analysis

Chemical analysis of organic residues collected during my fieldwork in Mexico and Guatemala was conducted by Dr. Brendan Derham at the Department of Fossil Fuels and Environmental Geochemistry at the University of Newcastle (Derham *et al*. 2000). The analysis used modern instrumental techniques such as elemental analysis of carbon, hydrogen and nitrogen (CHN), gas chromatography (GC) and gas chromatography-mass spectrometry (GC-MS) to samples collected during fieldwork identified as incense. The main aim was to investigate variability in the use of incense from different archaeological sites and to compare the results of the archaeological samples to modern samples of incense collected in the different markets during fieldwork.

5.5. THE RECORDING OF CENSER MATERIALS

The recording of the data necessary for the study of the incense burners was conducted with the use of a database designed for the project with the help of Prof. Clive Orton (Orton *et al*. 1993: 57-65). The database recorded attributes of the different kinds of censers grouped on the basis of their form and sometimes form and decoration.

All the materials from the censer collections of the archaeological projects and museums previously mentioned were recorded in the database with the exception of non-diagnostic undecorated small sherds. In addition, some vessels excavated by the archaeological projects selected in this study—which were not part of the collections of incense burners—as well as museum vessels whose identity as incense burners was not clear but which displayed evidence of burning inside, were tentatively considered incense burners and included in the sample and recorded.

5.5.1. The database program

The software used for the database was Access, which was the closest to an 'industry standard' available in the market. Access is the most widely used single-user database. It has the advantage of being available and familiar to many archaeologists.

5.5.1.1. Database categories and terminology

The categories and terminology bearing on form modes (formal attributes) as well as attributes of decoration, paste, firing, and chronology were drawn from terms in common use in the Maya archaeological ceramic literature (e.g. Adams 1971, Foias 1996, and Sabloff 1975) and from the studies of incense burners at Tikal (Ferree 1972), Quiriguá (Benyo 1979) and Palenque (Cuevas 2004). Some of the modal and attribute terms were altered or adjusted by me to reflect differences among the censers studied, which may relate to the different use of the censers or to a different nature of ritual veneration.

Six major categories of attributes comprise the structure of the database: form, burning evidence, context, chronology, decoration, and manufacture. Separate tables were designed in order to record and analyse attributes of the censers that fall into these six categories. For a complete reference to the categories used in the Censers Database, see the List of Database Tables in Section B (p. 139) of the Appendix. Note that some tables were designed to record unclassified and/or fragmented non-diagnostic censer material. Tables 24-31 in Section C (p. 140) of the Appendix serve as examples of some of the tables used. Attributes related to the form, decoration, burning evidence, manufacture, context and chronology of the censers represent the 'fields' and the 'values' of fields in the tables.

The database allows us to link tables together by setting up relationships between them. The advantage of establishing relationships between tables is that this allows us to retrieve and use data from more than one table and to avoid duplication of data, which is inefficient and can result in errors (Lewin 2004: 10, 40; Whitehorn and Marklyn 1998).

Relationships in the database were established based on the actual associations and/or interdependencies of the objects (entities or things) in the database. For an illustration of some of the database relationships, with reference to ladle censers as an example, see the chart that follows Tables 24-31 in the Appendix (p. 140). Similar relationships were created for each of the censer forms categorized in this study.

5.5.1.1.1. Form

The form of incense burners can reflect aspects of the meaning that the censers had in Maya cosmology. Formal attributes can also help us understand how the censers were used: for example, they can help us to determine whether censers were portable, how different parts of a censer related and were assembled; and/or what the functions of the different parts were. The study of the formal attributes of different vessels, all associated with burning incense and found in association in a given context, can also reveal how different vessels were used in combination in the process of burning incense.

As previously mentioned, the recording of the formal attributes of incense burners allows us to conduct a spatial analysis of specific types of vessels to detect differences and/or similarities in the use of vessels associated with different structures or areas within sites. It also allows us to identify similarities or differences in the forms of vessels used over larger areas. Such information may shed light on local aspects of ritual practices and religion. The recording of formal attributes also allows for a diachronic analysis of the forms of the censers aimed at understanding continuities, discontinuities and innovation in censer use and manufacture through time.

5.5.1.1.2. Decoration

The decorative or representational attributes of the censers can reflect aspects which relate to the meaning of incense burners in Mayan cosmology and possibly in some cases reflect the nature of veneration involving the vessels. Martha Cuevas (2000: 56, 2004: 338) suggests that flanged cylindrical stands with an effigy representation were '*objetos de culto*' (cult objects). The censers were regarded as cosmic trees and during rituals they were receptacles in which deities were incarnated. When incense and blood were burned in the censers, a process of alimentation and communication with those deities was made.

A diachronic analysis of motifs and representations which would have carried symbolic meaning can shed light on changes and continuities in religious ideas, which may be linked to social and political aspects of Maya society. In addition, decorative motifs and representations in different regions may suggest differences in ceremonial practices, which may shed light on aspects of local religion (Houston 2004).

5.5.1.1.3. Burning evidence

The type and location of burning evidence in vessels can help identify the function of vessels as incense burners or as vessels used for burning other substances. Similarly, the presence of burned residues and their location within the vessel can further contribute to an understanding of the function of vessels when the residues can be identified. Vessels containing abundant unburned resinous substances may have been used as containers rather than incense burners.

5.5.1.1.4. Manufacture

Attributes recorded in this category relate to how the censers were made or modelled. They include gross characteristics of paste and firing; slab-building, or modelling; how decorative elements were added, the presence or absence of striations and their type in the different parts of the censers, the presence of smoothing marks, and the types of joins of different parts of the censers. These attributes were recorded in approximately one third of the sample of materials in this study since it was originally thought that the information might be useful for chronological purposes as well as for understanding changes and continuities in the manufacture of the censers through time. During fieldwork, I chose to cease recording these attributes due to time constraints and owing to the fact that these attributes are more relevant to a study that focuses on censer production, a topic I will consider as a future project.

5.5.1.1.5. Chronology

The dates given to the materials in this study are those that were assigned by the archaeologists of the different projects under which the materials were excavated; such dates were based on stratigraphy and associated ceramics. In very few cases, however, the dates that were originally assigned were changed after consultation and in agreement with the archaeologists of the projects from which the materials came (see Table 4 for the general chronologies of some of the sites).

5.5.1.1.6. Context

Where the censers were found archaeologically is addressed with the contextual information of the censer materials. This information was necessary to establish which censer materials would be included in the contextual and distributional analysis.

The provenience of the censers can reveal aspects of the different ritual contexts in which the censers were used or deposited. It also permits analysis of the kinds of structures where the censers were found. Structure type and location can help establish whether different types of censers were used in public or domestic spheres and may shed light on the people who conducted or patronized the rituals and on differences in the use of censers by different people (Cuevas 2004: 373).

The contextual information also allows for a distributional analysis of the censers, which provides information

Table 4 General chronologies of sites (table: courtesy of Juan Pedro Laporte, Proyecto Atlas Arqueológico de Guatemala)

CUADRO CRONOLÓGICO Y COMPLEJOS CERÁMICOS									
FECHA	**ALTAR**	**CEIBAL**	**UAXACTUN**	**TIKAL**	**YAXHA-SACNAB**	**BARTON RAMIE**	**CUENCA MOPAN**	**CUENCAS OESTE**	**SABANAS**
1000					Isla		Mopan	Las Machacas	Puul
950		Bayal				New Town	Ixmabuy	Tanjoc	Tsutsuk
900	Jimba			Caban					
850			Tepeu 3	Eznab	Tolobojo	Spanish Lookout			
800	Boca 2		Tepeu 2	Imix	Ixbach				
750	Boca 1						Siltok	Río Poxte	Chakan
700	Pasión 2	Tepejilote							
650	Pasión 1		Tepeu 1	Ik	Ucutz	Tiger Run			
600									
550	Chixoy		Tzakol 3	Manik 3	Tsutsuy 2		Xilinte	Concoma	Tulix
500	Ayn					Hermitage			
450		Junco	Tzakol 2						
400	Salinas			Manik 2					
350					Tsutsuy 1				
300			Tzakol 1	Manik 1					
250		Cantutse 2	Chicanel			Floral Park			
200				Cauac-Cimi	Kuxtin 2				
150						Mount Hope	Atzante	Las Lajas	Sijón
100	Plancha 2			Cauac					
50 DC									
0									
100 AC	Plancha 1	Cantutse 1							
150				Chuen	Kuxtin 1	Barton Creek			
200									
250									
300					Yancotil 2	Jenney Creek 2			
350	San Félix 2	Escoba	Mamom 2	Tzec					
400									
450					Yancotil 1		Resumidero	Carrizal	Nance
500			Mamom 1						
550	San Félix 1			Eb Tardío	Ah Pam 2	Jenney Creek 1			
600									
650	Xe	Real		Eb Temprano	Ah Pam 1				
700									
750									
800									
900									

on the use of the different kinds of censers in different areas within sites. Context can be used to inquire about the presence or absence of specific kinds of censers in the more central, administrative and ceremonial areas of sites versus areas at different distances from the epicentral areas. Thus, contextual data and analysis can provide a better understanding of the use of incense burners in different social spheres.

5.6. THE SELECTION OF THE CENSER MATERIALS USED IN THE STUDY

The first step in the selection process was to exclude all materials which—based on the information provided by the projects as well as the information presented in publications, reports and other records—were not from the periods addressed in this study. This involved materials from the Preclassic, Early Classic and Late Postclassic periods. Mixed contexts of Late Classic, Terminal Classic and Postclassic materials with any of these earlier or later materials were also excluded.

Any analysis of the data necessitated a prior definition of the criteria to be used for the selection of the materials that would be involved in the analysis. Definition of criteria required an understanding of the contextual information of the materials recorded, its interpretation and organization. In the process of doing this, I learned about the limitations of my data, and only afterwards was I able to establish the general criteria for the selection of materials for each of the analyses. The difficulty in selecting materials for analysis lay in making a selection that would be consistent for all my sample materials, which were of different sizes and whose proveniences were very numerous and diverse. Provenience, size and completeness of the censer materials were important aspects to consider in the interpretation of the contexts and the selection of materials. The selection of the materials for each analysis was based on the questions to be addressed in each analysis.

The criteria used for each analysis is described in each relevant section. Nevertheless, as a general rule, and for all of the analyses, only materials larger than 15 cm were selected and only decorated sherds or diagnostic undecorated materials were considered. For the contextual analysis, only materials considered to be from primary contexts (materials which were intentionally deposited in the places where they were found) were used. For the distributional analysis, the materials selected were from primary contexts and some secondary contexts in cases in which the use of the censers was considered to have very likely been associated with the particular structures with which the censers were found, and when they could be dated with a high level of confidence. The functional analysis, which is based on evidence of use (primarily burning evidence) was mainly conducted on complete, or semi-complete vessels recovered from sealed contexts.

6. THE CENSERS IN PRIMARY CONTEXTS

The aim of this chapter is to present censers from primary contexts together with their associated materials. Given the nature of rituals as repetitive actions, the identification of censers found in primary contexts together with their associated materials in specific locations can shed light on the use of censers in rituals through time. The censer material presented here involves specimens that were dated from the Late Classic to the Early Postclassic period only[9]. The selection of materials from these periods was made considering all the materials recorded during my fieldwork in Guatemala. These involve the collections of censer materials from the sites of Tikal, Uolantun, and Yaxhá, the Petexbatun Regional Project, the Atlas Arqueológico de Guatemala Project, La Joyanca-Peten Noroccidente Project, as well as censers held by the Museo Nacional de Arqueología y Etnología in Guatemala. As was previously mentioned, with the exception of small non-diagnostic undecorated sherds, the entire censer collections of the Maya censers from the projects and museums selected were recorded.

In order to select the materials that were dated from the Late Classic to the Early Postclassic periods, the contextual information and the assigned dates of all the recorded materials from the collections were first identified based on the information provided by the directors of the projects as well as on reports and publications. Late Classic to Early Postclassic period materials were then selected. As previously mentioned, only censer fragments which are larger than 15 cm were selected. The size criterion was used under the assumption that smaller sherds are more likely to be from mixed and disturbed contexts.

With the exception of the contexts of censers found on the floors of structures, which sometimes showed some admixture from earlier periods, possibly from the core of the collapsed walls of buildings, censer materials excavated in lots which contained associated ceramics diagnostic of more than one period including Early Classic and/or Preclassic ceramics were not considered in all cases in which I was able to collect this information. These data were available in every case involving the materials excavated by the Proyecto Atlas Arqueológico de Guatemala and in many cases the materials excavated in Tikal and Uolantun as it was available in the records I was given of each lot. For some materials from Tikal and Uolantun and the materials of the other projects, the chronological assessment of the censers on the basis of their associated ceramics was mainly based on the information available in the excavation reports of the different projects and in some cases personal communication with the excavators.

For details of the information presented in this chapter the reader may refer to the Appendix (Section D, p. 144). Please note that the evidence presented here as well as in the Appendix in some cases is equivocal and usually fragmentary, so that my inferences based on the archaeological record are tentative and open to further testing. Under the category ‘Observations’ I discuss possible interpretations of the contexts in which the censers were found. Unless it is noted that the interpretations were made by other authors, they are my own. The illustrations of the censer materials are presented mainly in the form of photographs taken by me, with very few exceptions, and these are noted.

6.1. LATE CLASSIC PERIOD

(A→p. 145**) Censer material:** Two vases with an effigy face (310050, Figure 2a and 310385, Figure 2b).

Site: Aguateca

Structure designation, location, proposed function: Str. M7-34; epicentre; non-residential, possibly a locus for communal activities of elites.

Description: Low-range building with three rooms supported by a low platform.

Date of censer use: Late Classic

Censer context: Used on patio in front of structure, apparently during final phase.

---

[9] A division between Early Postclassic and Late Postclassic in the chronology assigned to the materials from the Proyecto Atlas Arqueológico de Guatemala was not made by the project (the Atlas project). Nevertheless, Postclassic materials from the Atlas were included in the selected sample.

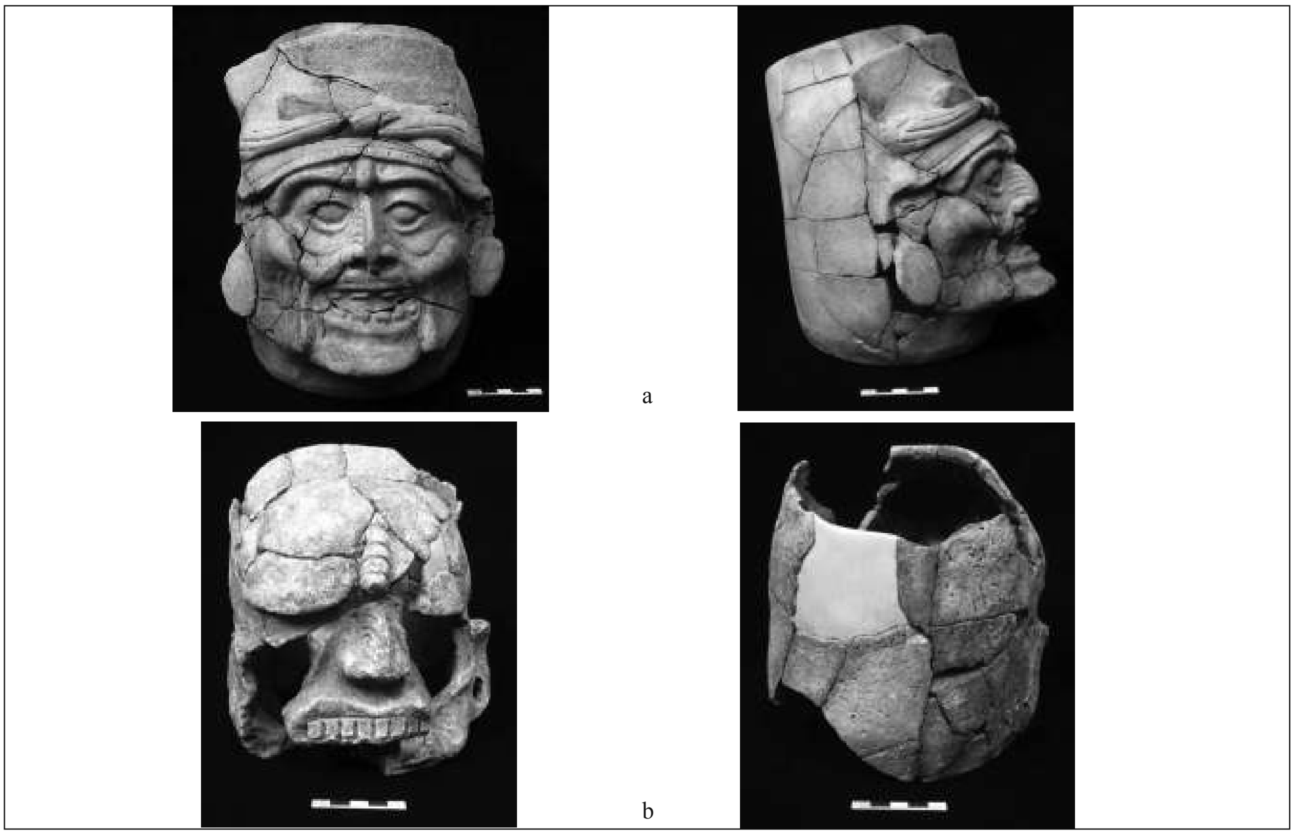


Figure 2 Vases with an effigy face from Structure M7-34, Aguateca, excavated by the Proyecto Aguateca (a) vase 310050 (b) vase 310385 (photos: author, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala)

Observations: The function of this structure is unclear, and as suggested by the authors it may not be residential. The two vases with effigy faces recovered from the floor of the patio of the structure may represent a context of final use and occupation. This is supported by the presence of numerous other objects that were present on the inner floors of M7-34, which included various kinds of ceramic vessels, grinding stones and *metates*, flint instruments and obsidian tools.

References: Emery and Aoyama 2007; Ponciano and Inomata 2004; Ponciano *et al*. 1998; Valdés *et al*. 2000

(B→p. 145**) Censer material:** A censer fragment (Figure 3).

Site: Aguateca

Structure designation, location, proposed function: Str. M8-17; epicentre; non-residential; possibly a shrine based on its floor plan similar to temples known in the Maya area (although lower and smaller).

Description: Square-shaped building, 3 rooms, part masonry, part perishable.

Date of censer use: Late Classic

Censer context: Used in rituals carried out within rooms.

Observations: It is possible that the censer material recovered from M8-17, which may have been a shrine, was part of general residue from occupation given the size of the censer fragment which is illustrated in Figure 3, unlikely to have been part of collapse material from the walls of the structure. The reported censer material may have been used in a ritual or rituals carried out in the room of the structure.

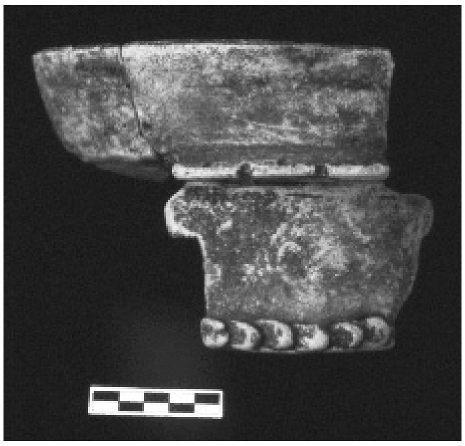


Figure 3 Censer fragment found in the antechamber of Structure M8-17, Aguateca, excavated by the Proyecto Aguateca (photo: http://www.ic.arizona.edu/ic/anth453/aguatecaweb/m8-17.html)

References: Inomata and Moscoso 1991: 466-527; Inomata and Stiver 1998: 431-452

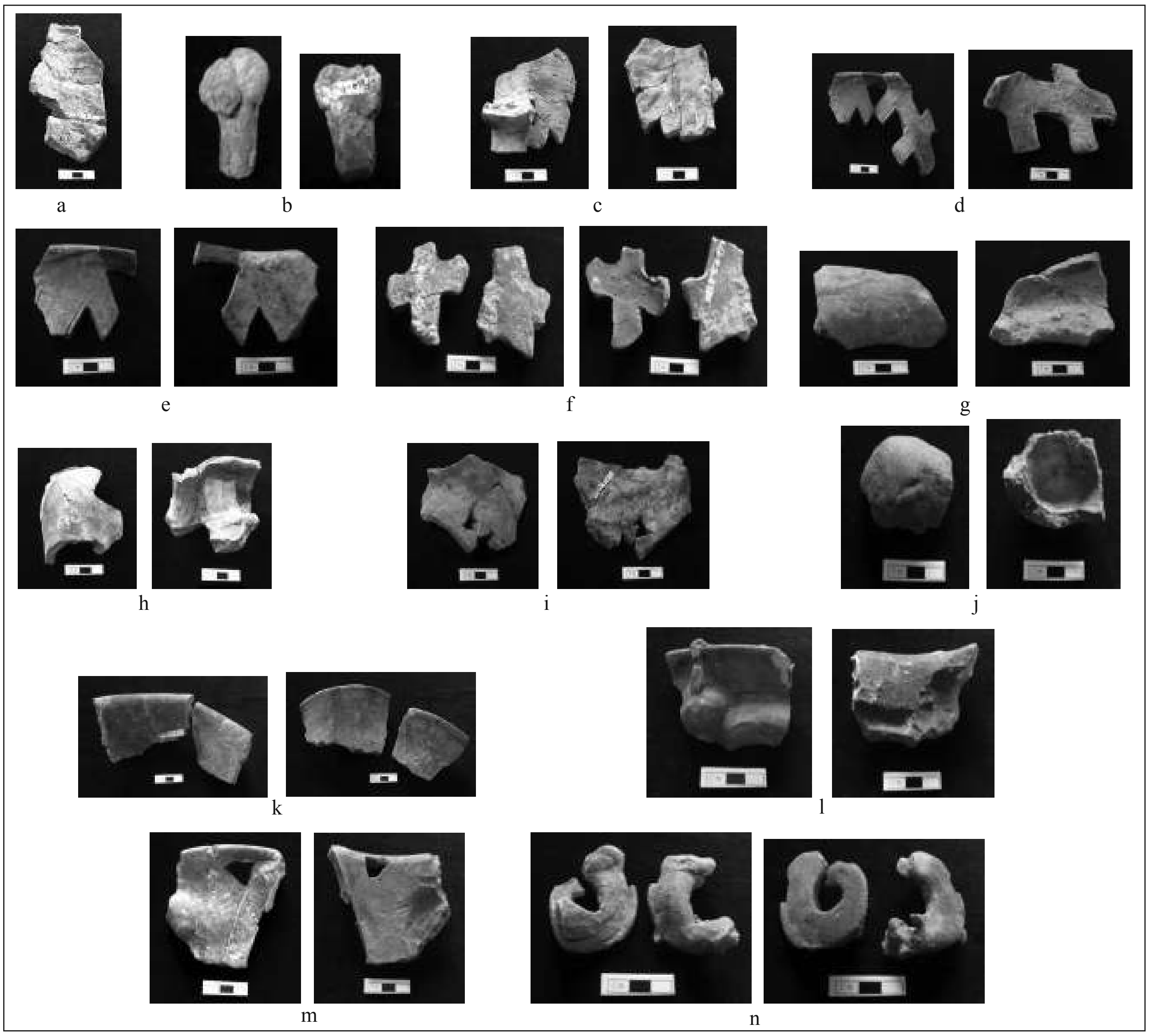


Figure 4 Censer fragments from Structure P5-7, Dos Pilas, excavated by the Proyecto Arqueológico Regional Petexbatun

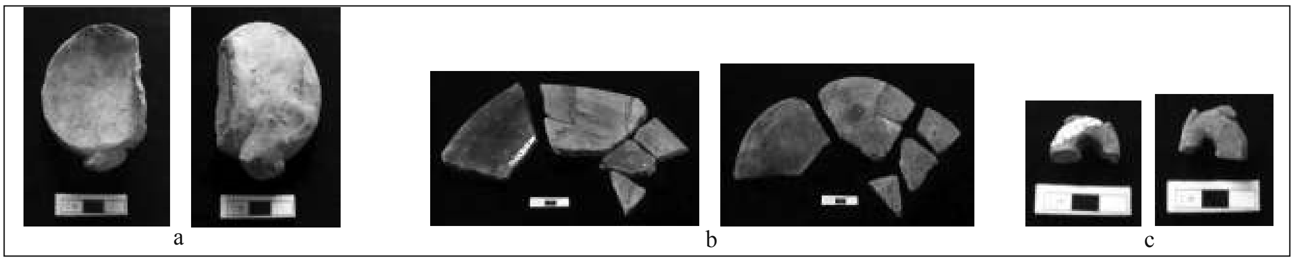


Figure 5 Censer fragments from Structure P5-7, Dos Pilas, excavated by the Proyecto Arqueológico Regional Petexbatun

(C→pp. 145-146**) Censer material:** Twenty seven fragments (Figures 4 and 5) including an earplug (607363 n. 1, Figure 5a), fragments of a vessel (607359 n.1, Figure 5b), possible 'Mixtec style' censer fragments (Figures 4d, e, and f), and several unidentified decorative fragments.

Site: Dos Pilas

Structure designation, location, proposed function: Str. P5-7 also referred to as 'El Duende'; peripheral to (1 km from) Central Plaza; temple.

Description: Vaulted building on high terraced platform, stuccoed and painted façade, stair with balustrades, associated with 13 monuments.

Date of censer use: Late Classic

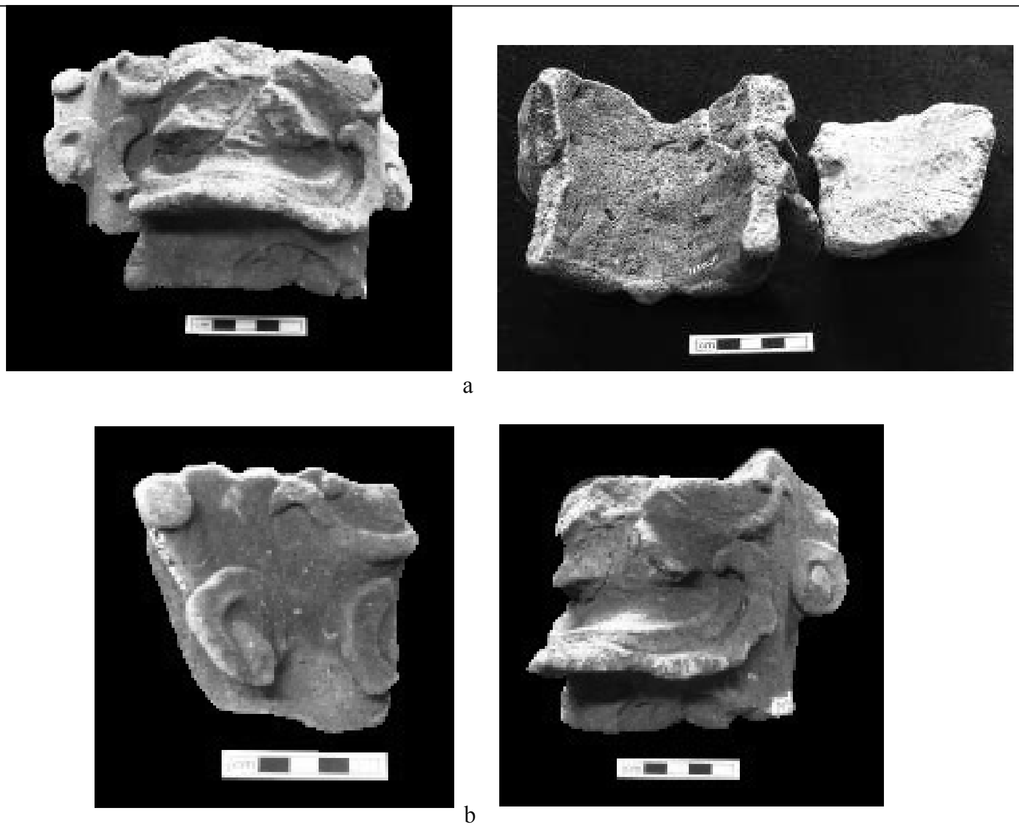


Figure 6 Censer material from Structure K4-2, Dos Pilas, excavated by the Proyecto Arqueológico Regional Petexbatun (a and b) hollow cylindrical stand with flanges and what is likely a Jaguar/Sun representation (614924 n.2)

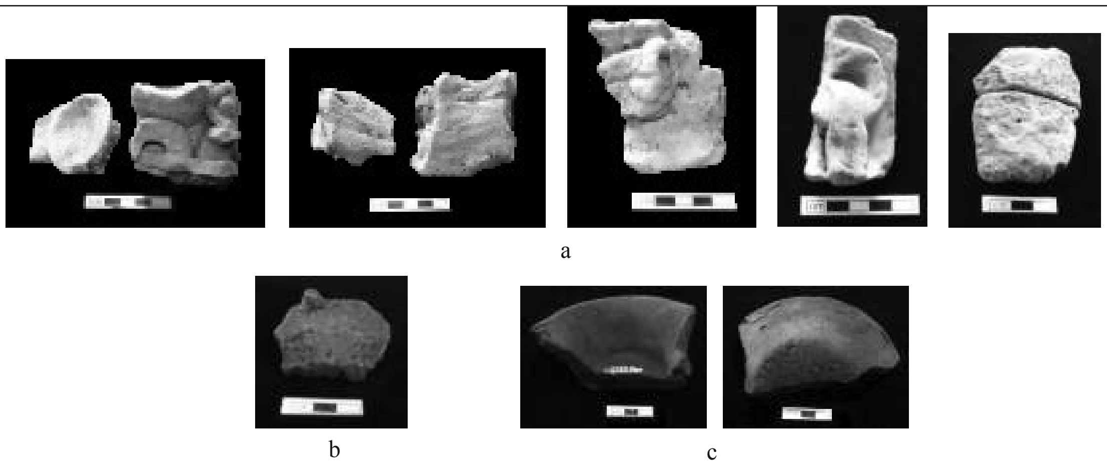


Figure 7 Censer material from Structure K4-2, Dos Pilas, excavated by the Proyecto Arqueológico Regional Petexbatun (a) various censer fragments (614924 n.2) (b) fragment (614973 n.1) (c) container with outflared walls (614960 n.1)

Censer context: Used in ritual(s) in rooms and then cached.

Observations: The censer fragments were found in a probable cache or special deposit below Floor 2 on the interior room along the central axis of Structure P5-7, a temple in Dos Pilas. The data suggests that resins were burned in censers and then the remains of censer-burning together with other materials used in a ceremony were buried via a cut in the floor.

References: Escobedo *et al*. 1990: 277-304

(D→p. 146**) Censer material:** Various fragments including a hollow cylindrical stand with flanges and what is likely a Jaguar/Sun representation (614924 n.2, Figures 6a, b), an earplug (614924 n.2, Figure 7a), a spiked sherd (614973 n.1, Figure 7b), and a small container with outflared walls (614960 n.1, Figure 7c).

Site: Dos Pilas

Structure designation, location, function: Str. K4-2, Group K4-1; epicentre; Group K4-1 was residential;

Str. K4-2 function not known but non-residential.

Description: Low-range structure on low platform; carved hieroglyphic panel (possibly part of wall of building).

Date of censer use: Late Classic

Censer context: Censers used in ritual carried out on surface of platform of Str. K4-2 near the carved panel possibly when it was part of the exterior wall of the building; ritual paraphernalia left on platform surface.

Observations: The censers recovered seem to have been part of a ritual carried out on the platform surface of Structure K4-2 and near a carved panel, which seems to have been part of the exterior wall of the building. Evidence suggests that rituals were carried out, the censers were used, and the ritual paraphernalia was left on the platform surface. The function of Structure K4-2 is unclear, however, the location of the structure to the northeast, and the presence of the panel and incense burners suggests that K4-2 may have been of a ceremonial nature.

References: Palka 1990: 146-165

(E→p. 146**) Censer material:** Hollow cylindrical stand with flanges and what is likely a Jaguar/Sun representation (PNT 020, Figure 8).

Site: Tikal

Structure designation, location, function: Str. 6C-50-2; Group 6C-XV (300 m south of Mundo Perdido); shrine or temple.

Description: Masonry vaulted building, two longitudinal rooms, niche dividing stairs.

Date of censer use: Late Classic

Censer context: Found in situ in the niche.

Observations: This cylindrical stand was found in situ in a niche in the frontal stairway of a structure interpreted by Laporte as being a shrine. The context suggests the use of this kind of censers in niches of the stairways of shrines.

References: Laporte and Iglesias 1999: 32-57

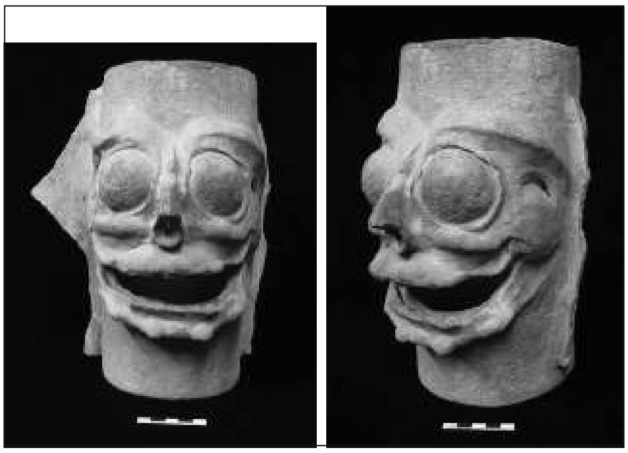


Figure 8 Hollow cylindrical stand with flanges and what is likely a Jaguar/Sun representation (PNT 020) found in a frontal niche in the frontal stairs of Structure 6C-50-2, Mundo Perdido, Tikal, excavated by the Proyecto Nacional Tikal (photos: author, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala)

(F→p. 147**) Censer material:** Spiked bucket-like vessel (A-326, Figure 9).

Site: Ixkun

Structure designation, location, function: East Structure, Patio 1 in Group 10-B; periphery; residential.

Description: Information not available

Date of censer use: Late Classic (Tepeu 1 sphere)

Censer context: Associated with a burial. In addition to this vessel, two polychrome hemispheric vessels of the ceramic type Saxche Orange Polychrome: Saxche were found.

Observations: The context where this spiked vessel was found suggests the use of this kind of vessels in funerary rituals in residential areas during the Late Classic period. The use of this vessel as an incense burner is not certain although spiked bucket-like vessels have often been referred to in the literature as censers (see Section 9.3.7.).

References: Laporte and Mejía 2005: 113-160

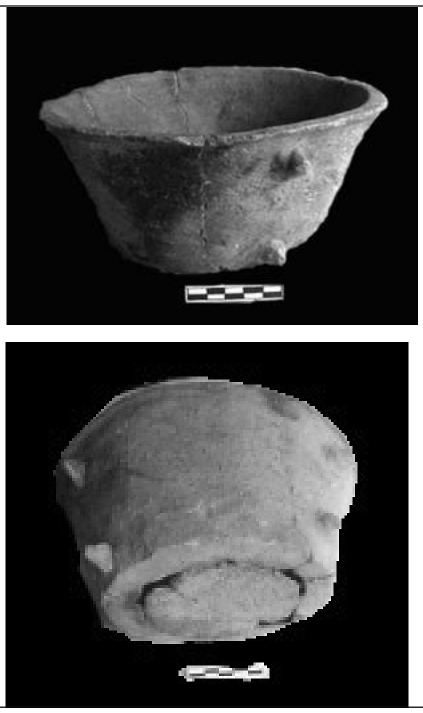


Figure 9 Spiked bucket-like vessel (A-326) from Burial 244 in the East Structure of Group 10-B, Ixkun, excavated by the Proyecto Atlas Arqueológico de Guatemala

(G→p. 147**) Censer/ceramic material:** Two spiked bucket-like vessels (PN 41D-16-2 421A and PN 41D-16-2 421B, Figures 10a), an inward curving, pedestal-

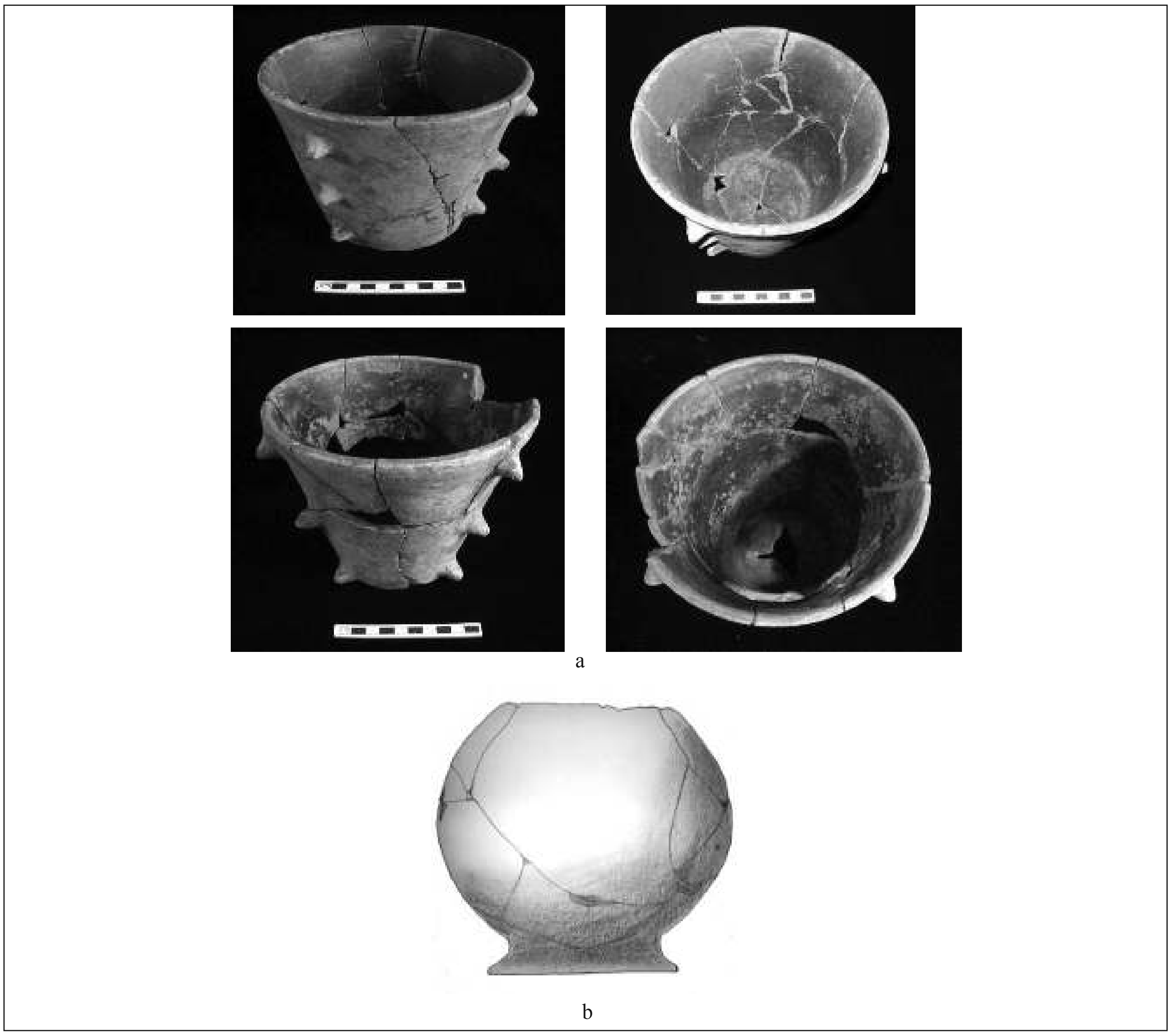


Figure 10 (a) Spiked bucket-like vessels PN 41D-16-2 421A and PN 41D-16-2 421B from bench niche in Structure C-12, Piedras Negras (photos: author, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala (b) reconstruction of 'chalice' vessel from room corner (drawing: courtesy of René Muñoz, Proyecto Piedras Negras)

based container, much like a *tecomate*, referred to by its excavators as a 'chalice' vessel (Figure 10b), and a 'polychrome cylinder' (no photos or drawings available; not reconstructed due to its fragmentary condition).

Site: Piedras Negras

Structure designation, location, function: Str. C-12, Group C, South Plaza; epicentre; mainly ritual and administrative.

Description: Building with two rooms, one with a bench with a niche.

Date of censer use: Late Classic (Chacalhaaz ceramic phase A.D. 750-850)

Censer context: Spiked vessels are from the 'bench' niche; the polychrome cylinder and the 'chalice' came from the same room as the spiked vessels. The spiked vessels and the polychrome cylinder are reported to have been found in situ. Rooms were filled so context here is believed to be a termination ritual.

Observations: The deposit of materials associated with this structure interpreted by its excavators as being ritual or administrative is suggested to have represented termination rituals in which the vessels would have been placed in the rooms, covered with fill, and later the rooms would have been sealed. The two spiked vessels and the polychrome cylinder were found on the floor of the room of the structure and had traces of burning[10]. The spiked bucket-like vessels found in

---

[10] Among the deposits found in this building, were a number of ceramic animal heads including a frog, a turkey, a harrington or *pizote*, a possible rabbit, and a deer (all found in a small area of the building). It was suggested that when the room was filled, it took the form of a large bench with a new niche in its front. The animals were found on and near its surface.

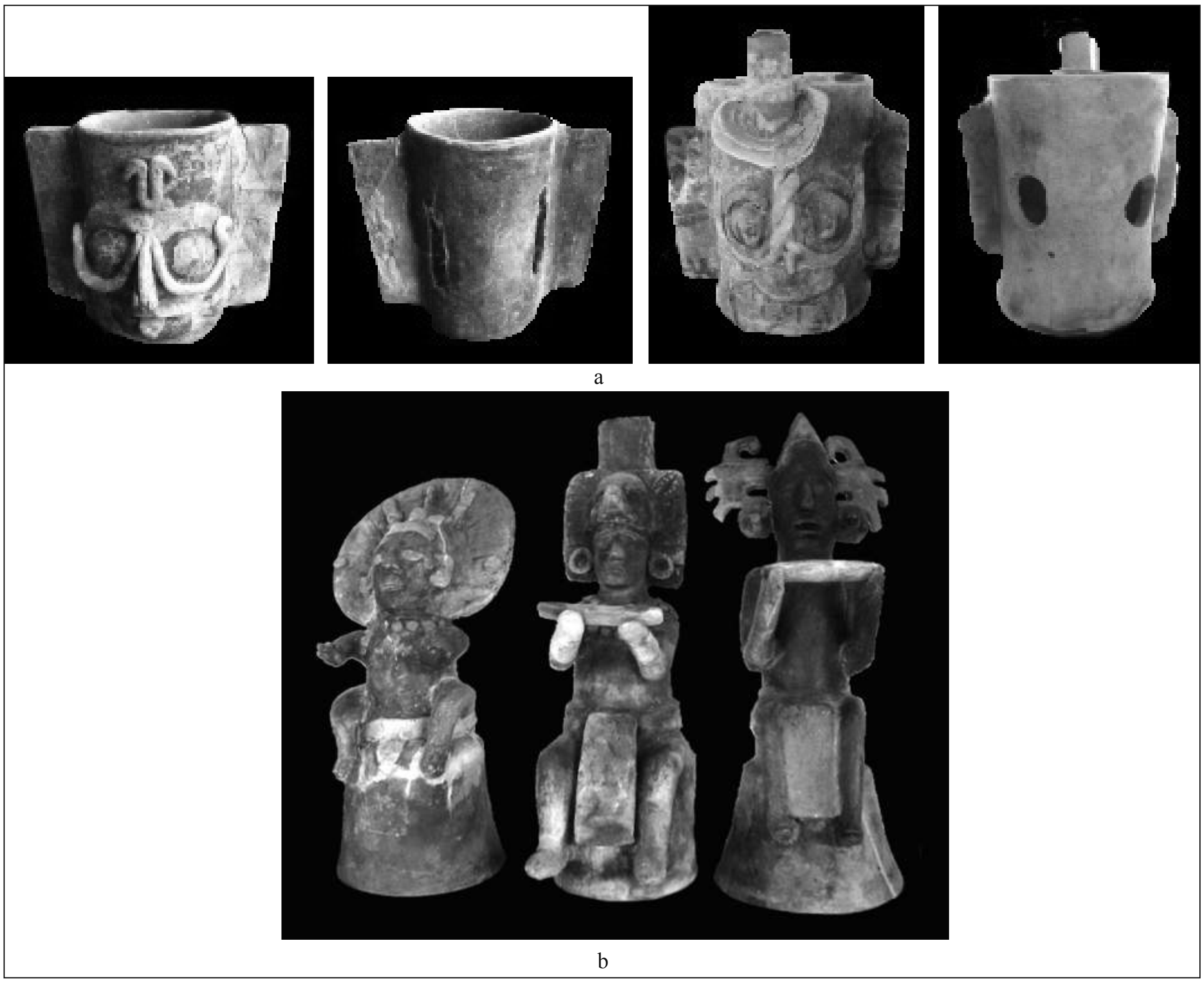


Figure 11 Offering PTV-2 located in the core of the platform of Structure 5D-5 (Temple 5), Tikal, excavated by the Proyecto Templo V (a) hollow cylindrical stands with flanges and the Jaguar/Sun representation (b) seated-effigy covers

situ suggest that these kinds of vessels were kept in niches of benches in rooms of structures, possibly of a ceremonial or administrative function such as this one, associated with the elite.

References: Houston *et al*. 2000; Jackson 2001, 2002: 806-809

(H→pp. 147-148**) Censer material:** Two hollow cylindrical stands with flanges and what is likely a Jaguar/Sun representation and three seated-effigy covers (Figure 11).

Site: Tikal

Structure designation, location, function: Str. 5D-5, (Temple V); epicentre; temple.

Description: High, terraced platform with vaulted masonry building with roof comb.

Date of censer use: Early Late Classic (Ik Complex)

Censer context: Core of platform on an axis that strongly suggests association with the burial in bedrock; probably part of a ritual associated with the burial. The two flanged effigy stands were placed on the ends and the three seated-effigy covers were aligned between them. The context also had evidence of wood and possibly burned resin.

Observations: Given the same axis in which the censers and Burial PTV-2 were located which coincided with the axis of the upper room of the temple, it is likely that the censers (Offering PTV-2) were used in a ritual associated with and were located in relation to the burial located below it, an association which may reflect the concept of centrality in Maya cosmology, or *axis mundi*, a theme that seems to be present in temples and incense burners, and which may have been associated with burials (see Section 3.4.3.; Freidel *et al*. 1993; Taube 1998)[11]. This type of context may have

---

[11] Linda Schele argues that the cross shape is the emblem of the world tree. She notes that for the Chamulas in Chiapas, Mexico, crosses are trees in blossom like ceiba trees, and that the dead of Romería are buried at the foot of flowery crosses. According to Schele, these crosses are an analog of the Wakan-Chan tree (the tree that has raised up at the beginning of creation in order to separate the sky from the earth) that covers the body of Pakal at Palenque. Classic texts at Palenque, tell us that the Wakah-Chan tree is the *axis* of creation and the cosmos (Freidel

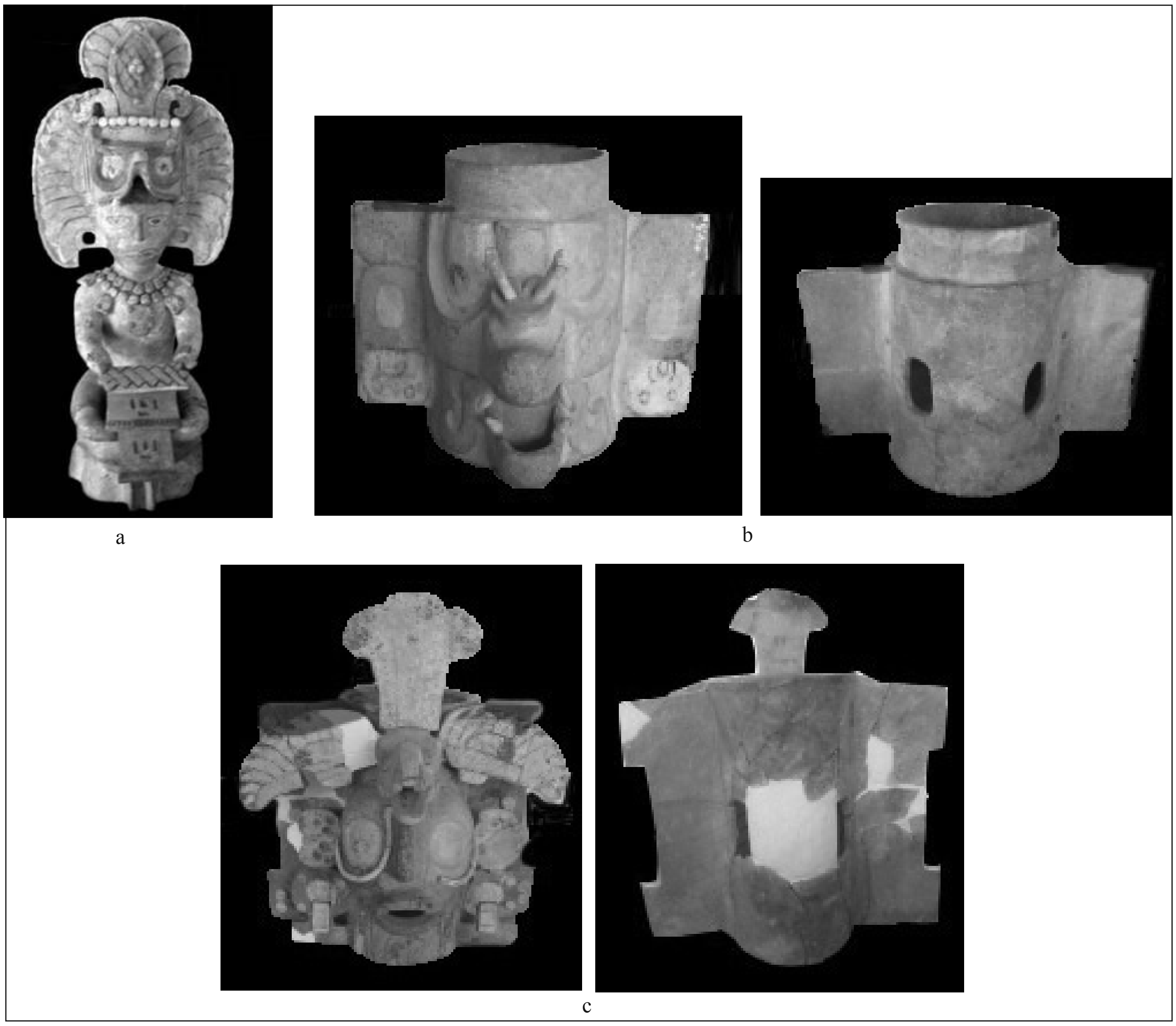


Figure 12 Deposit of incense burners found in excavation through Unit 1 in Structure 5D-32-1st, Tikal, excavated by the Tikal Project (a) seated-effigy cover 12U-82a/16 (b) flanged zoomorphic pedestal-based censer with base 12U-82b/16 (c) hollow cylindrical stand with flanges and what is likely a Jaguar/Sun representation 12U-84a/16

an analogue in Palenque where the cylinders were reported to have been found within the core of the substructure of the temples, occasionally deposited on a flat surface made on the bedrock and then covered with core material as in the Temple of the Cross (see Chapter 7).

References: Gómez 1998: 174-182

(I→p. 148**) Censer material:** A seated-effigy cover (12U-82a/16, Figure 12a), a flanged zoomorphic censer with base (12U-82b/16, Figure 12b), two hollow cylindrical stands with flanges and what is likely a Jaguar/Sun representation (12U-84a/16, Figure 12c and 12U-84b/16, Figure 13a), a spiked pedestal-based vessel (12U-85/16, Figure 13b), two spiked hollow cylindrical stands (12U-86a/16, Figure 13c and 12U-86b/16, Figure 13d) and some unfitted fragments.

Site: Tikal

Structure designation, location, function: Str. 5D-32; North Acropolis; epicentre; temple.

Description: High, terraced platform with vaulted masonry building with three tandem rooms. Room 3 had a bench/throne abutting the back wall on Floor 1, the final surface.

Date of censer use: Early Late Classic

Censer context: Censers were placed in a timber roof chamber beneath the bench/throne; the bench was on Floor 1; beneath Floor 1 was Floor 2 and the chamber

---

et al. 1993: 393-403). Censers also appear to have had a symbolism associated with the world tree and the concept of centrality or *axis mundi* in Maya cosmology. Even temples have been suggested to represent the same concept of *axis mundi* (Taube 1998). The alignment of the cross as a world tree with burials in modern and Classic times, may have an analog in the alignment of incense burners with burials, as in the case of the archaeological context in Temple V. But regardless of the symbolic meaning of censers, the alignment of burials with material culture of ritual such as censers reflects a conduit of communication between the world of the living and the supernatural.

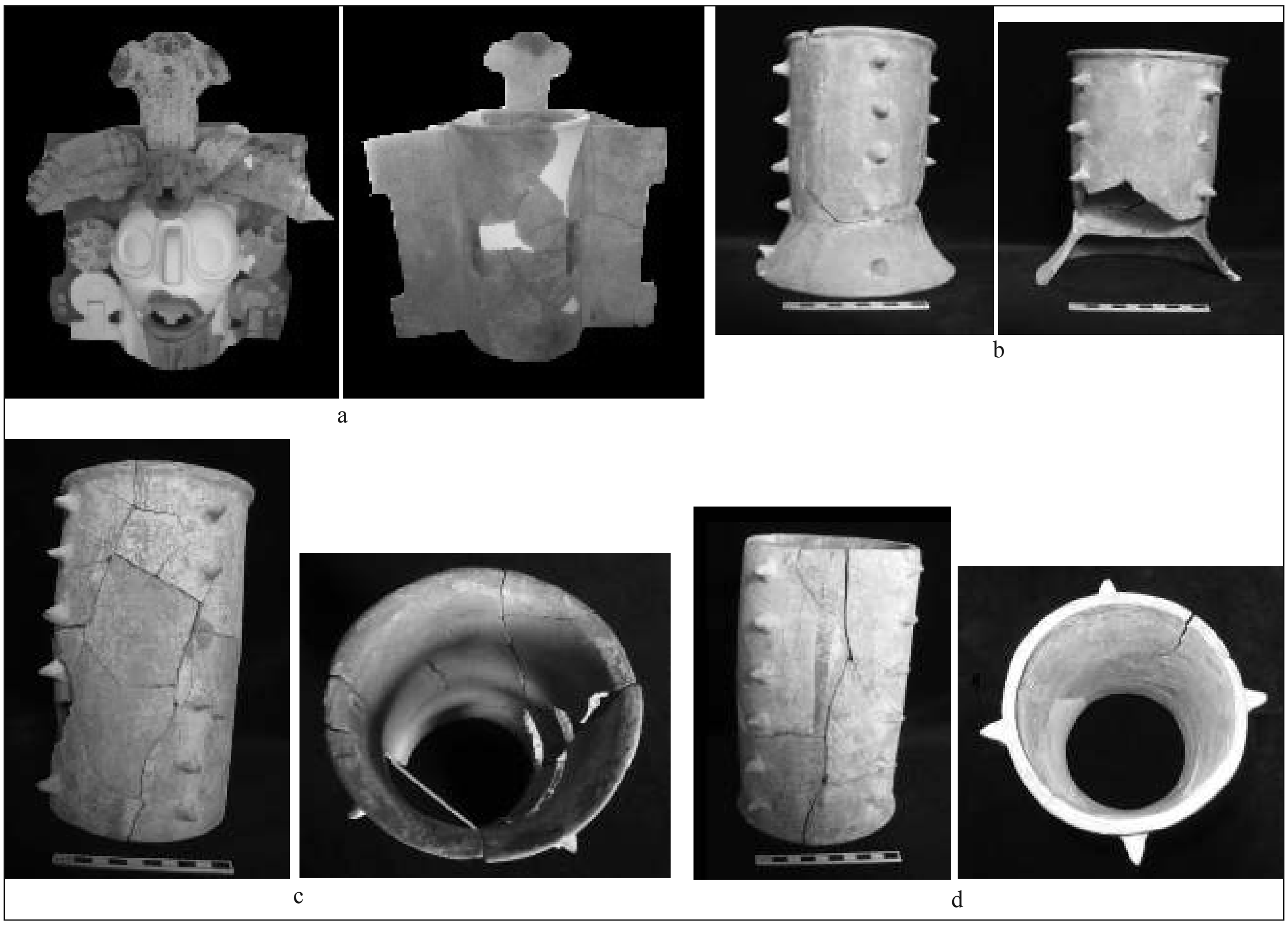


Figure 13 Deposit of incense burners found in excavation through Unit 1 (bench) in structure 5D-32-1st, Tikal, excavated by the Tikal Project (a) hollow cylindrical stand with flanges and what is likely a Jaguar/Sun representation 12U-84b/16 (b) spiked pedestal-based censer 12U-85/16 (c) spiked hollow cylindrical stand 12U-86a/16 (d) spiked hollow cylindrical stand 12U-86b/16

rested on Floor 3 and was sealed by Floor 2. The evidence suggests that these were deposits placed on the structure's primary axis. Censers were likely part of a ritual associated with a structure modification effort, namely destruction of whatever was associated with Floor 3 and therefore contemporaneous with Floor 2 activities, and pre-dating the bench/throne or altar.

Observations: The sealed deposit of incense burners in Room 3 of this temple was placed beneath Unit 1 ('bench'), which may have served as a throne or altar at the centre rear of the room. Taube discusses the role of the temple in Maya cosmology as a house and as a model of the universe, associated with the three-stone hearth, a symbol of the *axis mundi*, and notes that temples served as an important link between the living and the divine. Altars (and thrones) also signified models of the universe and the *axis mundi*. According to Taube, censers were the embodiment of the temple and during fire ceremonies became points of communication between the living and the divine (Taube 1998: 429, 449). The same author marks the importance of hearths in the form of at least some censers (especially zoomorphic censers and three-pronged censers) as a means of conjuring and communicating with the divine (Taube 1998: 438, 439). Freidel, Schele, and Parker, also note an association of spiked censers with the thorny ceiba trunk, which also represented the *axis mundi* and would have served as portals between the human plane and the divine (Freidel *et al*. 1993: 214-218, 438, 454). That the incense burners from this deposit were placed in alignment with Unit 1 (a possible altar or throne) as well as the important Burial 195, also in Structure 5D-32-1st, placed in bedrock beneath and along the north-south centreline of the structure before the placement of the censers and construction of Unit 1, is plausible, although difficult to determine from the records consulted. If the placement of incense burners in the sealed chamber were aligned with Unit 1 as well as the burial, their context may reflect their symbolism as occupying a central place in Maya cosmology, in an alignment that together with the altar or throne and the location of the burial may have represented the axis mundi. Central Mexican colonial documents suggest that the god of fire resided in the three-stone hearth (Taube 1998: 433). David Stuart (personal communication to Taube, 1993) suggests that the Jaguar God of the Underworld may be the Classic Maya god of fire. The association of three-stone hearths with temples and the placement of the deceased in temples, may suggest a symbolic association between the deceased as the god of fire

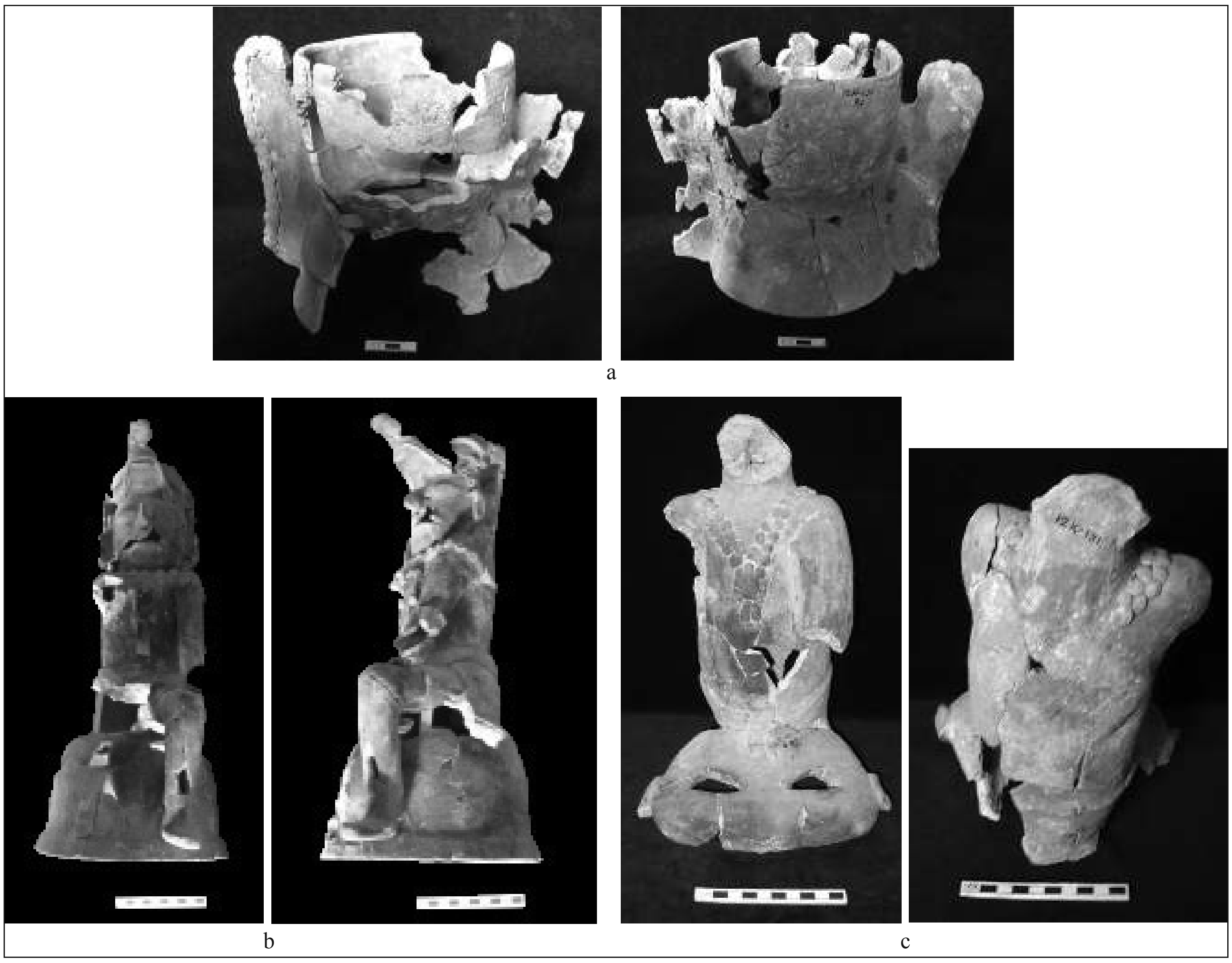


Figure 14 Censer material from Structure 5D-33-2nd, Tikal, excavated by the Tikal Project (a) hollow flanged pedestal-based censer (?) 12K-130/10, 15 (b) seated-effigy cover 12K-396/4, 15, 17 (c) seated-effigy cover 12K-131/10 as written on the object but recorded by Ferree in her list of figures as 12K-131/15

at the center of the world. The censers found in the chamber below Unit 1 in Temple 5D-32-1st may have been used in the temple, given that a small amount of fragments of the censers were found outside the chamber elsewhere in the temple rooms, and then placed in the chamber where they were found in an alignment with Unit 1 which may have been used as an altar or throne, and perhaps also Burial 195.

References: W.R. Coe 1990: 573-574

(J→pp. 148-149**) Censer material:** A hollow flanged pedestal-based censer (?) (12K-130/10, 15, Figure 14a), and two seated-effigy covers (12K-396/4, 15, 17, Figure 14b and 12K-131/10 as written on the object but recorded by Ferree in her list of figures as 12K-131/15, Figure 14c).

Site: Tikal

Structure designation, location, function: Str. 5D-33; North Acropolis; epicentre; temple

Description: High, terraced platform with vaulted masonry building composed of two chambers; upper façade and presumed roof comb believed to have had elaborate stuccowork.

Date of censer use: Intermediate Classic (Late Classic) (Ik Complex)

Censer context: Structure 5D-33-2nd; censer parts were found in an accumulation of black-brown dirt, charcoal, sherds, and fragments of monuments on the pit of Stela 31 in Room 2 and the west portion of the same room as well as in room fill lots of the same structure; also from a unit (Unit 2) at the stair bottom described as 'a brief expanse of earthy burned debris' which contained censer parts and charcoal, some had inter-lot fits with fragments in Room 2.

Observations: The hollow flanged pedestal-based censer and the two seated-effigy covers referred to in this section, which were found in temple 5D-33 appear to have been used in a termination ritual upon the construction of structure 5D-33-1st, perhaps associated with the interment of an individual found in Burial 23 and possibly another one from Burial 24. Construction of structure 5D-33-1st is reported to have started directly following the interment of Burial 23, centred less than a metre west of the front-rear axis of Str. 5D-33-1st. Burial 24, which is reported to have followed on Burial 23 by a small interval, was found in the axis of 5D-33-1st and centred beneath it and is also considered to be part of the early staging of structure 5D-33-1st construction. The terminal activities may have involved the re-erection of Stela 31 in the room of structure 5D-33-2nd as suggested by Coe (1990: 521). The presence of fragments that were part of one of the effigy covers (12K-396/4, 15, 17) labelled as having been recovered from different lots (4, 15, and 17), suggests that this effigy cover would have been used in activities that involved the reerection of the stela, the deposition of materials at the Unit 2 stair bottom, and the construction of Structure 5D-33-1st.

References: W.R. Coe 1990: 510-527; Tikal lot cards

(K→p. 149**) Censer material:** A ladle censer (5D-5-25-9B) and a vessel with high walls and an everted rim (5D-5-25-9A), Figure 15.

Site: Tikal

Structure designation, location, function: Str. 5D-5 (Temple V); east of the South Acropolis; epicentre; temple.

Description: High, terraced platform with vaulted masonry building with one room and roof comb.

Date of censer use: Early Late Classic (A.D. 600±50)

Censer context: On a burial excavated in bedrock along the axis of the upper room of the temple. The burial was made after the construction of Floor 2 of the basal platform. The ladle censer was found facing down within a bowl of flat base, tall outcurved sides, direct rim and a bevelled lip. The vessels were deposited on the wood of the cist's roof that contained the burial.

Observations: The ladle censer found within vessel 5D-5-25-9A in a context suggesting that the vessels would have been deposited on the wood of the cist's roof of the burial, suggests that the censer was used in association with the other vessel in a funerary ritual dedicated to the person whose remains were found in the cist. The alignment of the vessels with the burial and the upper room of the temple suggests an axis that would have been regarded as a conduit of communication between the world of the living and the supernatural.

References: Gómez 1998: 174-182

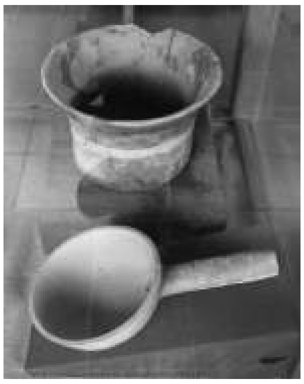


Figure 15 Ladle censer 5D-5-25-9B and vessel with high walls and everted rim 5D-5-25A, Burial 2, Structure 5D-5 (Temple V), Tikal, excavated by the Proyecto Templo V

(L→pp. 149-150**) Censer material:** A container with outflared walls (306882 DPA 159, Figure 16).

Site: Aguateca

Structure designation, location, function: Str. M8-10; in elite residential area south of the Palace Group and to the east of the Causeway

Description: Range structure with three rooms (north, central, and south) and two additions to these. The north, central, and south rooms had benches in the back half of the rooms and higher floors than the other rooms. Structure has been called the 'House of the Scribe' on the basis of the presence of artefacts interpreted as being implements of a scribe.

Date of censer use: Late Classic

Censer context: On the floor of the north room

Observations: The artefacts found on the floor of the rooms of this structure, interpreted by its excavators as the residence of an elite family given the presence of utilitarian objects and prestige goods, including bowl (306882), suggest a context of final occupation of the structure. It is possible that the bowl was found where it was last used. The suggestion that the bowl was used to burn resin is based on its form and burning pattern.

References: Inomata 1995: 216-230, 868

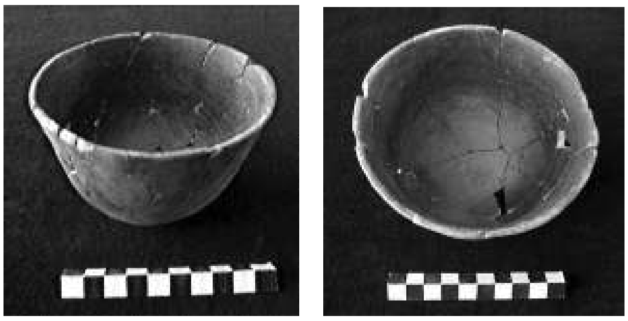


Figure 16 Container with outflared walls 306882 DPA 159 from Structure M8-10, Aguateca, excavated by the Proyecto Aguateca (photos: author, with permission of the Museo de Arqueología y Etnología de Guatemala)

6.2. TERMINAL CLASSIC PERIOD

(M→p. 150**) Censer material:** A flanged zoo-morphic pedestal-based censer (87-24, Figure 17) and a ladle censer (87-25, Figure 18).

Site: Altar de Sacrificios

Structure designation, location, function: Mound 24; periphery; residential??

Description: Structure not completely excavated so no description is possible; see Observations, below.

Date of censer use: Terminal Classic (Late Boca phase A.D. 830-909).

Censer context: Not clear but seems to have been part of a cache.

Observations: The flanged zoomorphic pedestal-based censer and the ladle censer were found complete and in direct association in a low mound in a settlement area of Altar de Sacrificios that may be a residential area. Mound 24 could have been a residential structure, and the in situ association of the two vessels suggests that they are likely to have been used together in rituals of a domestic nature.

References: Adams 1971; A.L. Smith 1972: 241, 171-173

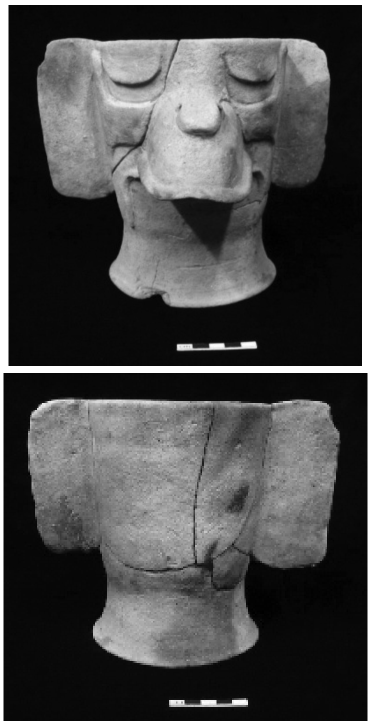


Figure 17 Flanged zoomorphic pedestal-based censer 87-24 from Cache 23, Mound 24, Altar de Sacrificios, excavated by Harvard University (photos: author, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala)

Figure 18 Ladle censer 87-25 from Cache 23 in Mound 24, Altar de Sacrificios, excavated by Harvard University (after Adams 1971: Fig. 101e)
© 2011 by the President and Fellows of Harvard College

(N→p. 150) Censer material: Censer fragments (PSPI 174, 176, 173, 177, and 175, Figure 19) including earplugs, a flange fragment, and a fragment with a face representation.

Site: Suk Che' 9

Structure designation, location, function: Structure 2; 600 m northwest of the central area of the site; on a hill that was artificially terraced; ceremonial.

Description: Structure that rests on a rounded platform; covered with stucco and painted with red pigment.

Date of censer use: Terminal Classic

Censer context: Cache (*Escondite 29*) located in the northwest corner of the structure on its uppermost floor. The cache consisted of a concentration of broken incense burner material and charcoal.

Observations: The structure was located in Sector A of Suk Che' 9, a group classified as a Complex Residential Unit northwest of the central area of the site of Suk Che'. Sector A covered the extension of a hill which overlooked the rest of the site, and was considered by Iglesias and Ciudad as having a funerary and ritual character, given the lack of structures on the sector that could be classified as residential. A possible pattern of cists excavated along the terraces of the hill has also been suggested by the authors. Structure 2 appears to have been a ceremonial structure. A burial in a cist (Burial 100) was identified 0.50 m of the structure's axis, 0.50 m deep. The concentration of censer material and charcoal appears to have been part of a ritual conducted on the floor of this ceremonial structure.

References: Iglesias and Ciudad 1994: 310-327

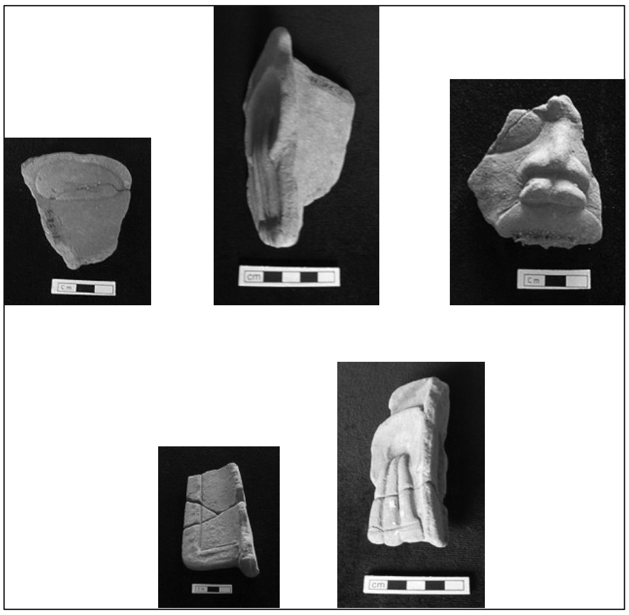


Figure 19 Censer fragments PSPI 174, 176, 173, 177, and 175, respectively and from left to right, from Escondite 29 in Structure 2, Sector A, Suk Che' 9, excavated by the Proyecto Atlas Arqueológico de Guatemala

(O→pp. 150-151**) Censer material:** A flange fragment (PSPI 73, Figure 20).

Site: Ixtonton

Structure designation, location, function: Str. 30, approximately 18 m northwest of Ball Court 2, on the surface of the South Causeway; epicentre.

Description: Structure with apsidal floor plan; two construction phases identified. Only one wall of the first construction phase was identified; the remains of a stela were found associated with this earlier construction in the core of the stair of the second phase of the structure along its primary axis. The second construction phase consisted of a platform with an apsidal lower terrace on top of which was another upper rectangular terrace with no building on top. A stela was also found in front of this structure.

Date of censer use: Terminal Classic

Censer context: Cache (*Escondite 12*) found within the compound of the first construction phase of the Structure. The cache consisted of a concentration of materials in a layer of black burned earth, charcoal and some large stones, fragments of different censers, and abundant Terminal Classic ceramic material.

Observations: The structure in which the concentration of materials was found was located on the floor of the South Causeway of Ixtonton. Its function would have been ceremonial. The concentration of material and '*Escondite 12*' were interpreted by Laporte and colleagues as the result of a termination ritual or ritual of propitiation conducted within the compound of the first construction phase of the Structure in association with the construction of its later phase. According to the authors 'it seems evident that the Structure of the apsidal floor plan had a similar function during its two construction phases, related to the ritual of a stela cult. Its location on the South Causeway suggests a specific access towards the entrance to the ceremonial area of the site, in addition to its proximity to Ball Court 2. The covering of the early phase was marked by termination rituals which included the destruction of Stela 9 and the partial burial of the lower part of the Structure' (Laporte *et al*. 1991, translation mine, no page numbers available).

References: Laporte *et al*. 1991

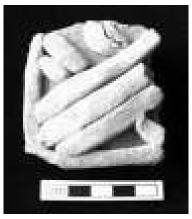


Figure 20 Flange fragment PSPI 73 from Escondite 12 in Structure 30, Ixtonton, excavated by the Proyecto Atlas Arqueológico de Guatemala

(P→p. 151**) Censer material:** A ladle censer (PSPI 503, Figure 21a), two ladle censer handles (PSPI 502, Figure 21b and PSPI 663, Figure 21c), an incomplete ladle censer container (Figures 21d), fragments of other censer material (Figures 21e, f), and figurine heads (Figure 21g).

Site: El Reinado or Ni' Tuunal

Structure designation, location, function: Southwest structure; Acropolis, Plaza A; epicentre; function not clear.

Description: Three construction phases identified; relevant construction phase consisted of a vaulted building that shared walls with adjacent structures to the west and south. The room of the building had two access points which were sealed and faced two patios.

Date of censer use: Terminal Classic

Censer context: Cache (*Escondite 84*) on burned soil on the floor of the structure consisting of a concentration of material was composed of fragments of ladle censers, fragments of a spiked vessel, appliqué fragments of unidentified censers, figurine heads, obsidian blades and fragments of obsidian blades, and the fragment of a flint knife.

Observations: The concentration of material found on the floor of the southwest structure of the Acropolis classified as '*Escondite* 84', was interpreted by Mejía and Laporte as material deposited as an offering of termination for the closure of the compound during the third of its construction phases.

References: Mejía and Laporte 2004: 190-242

(Q→p. 151**) Censer material:** A ladle fragment (PSPI 22, Figure 22a), a ladle censer (PSPI 23, Figure 22b), and a small container with outflared walls (PSPI 24, Figure 22c).

Site: Aktun Ak' Ab cave or Cueva Chavez

Structure designation, location, function: Chamber 12 (E); Cuenca alta of the Mopan River, Municipality of Dolores, 10 km northwest of the settlement of Dolores

Description: Chamber in cave

Date of censer use: Terminal Classic

Censer context: Surface material; in addition to the ladle censer material and the small container with outflared walls two other vessels dated to the Terminal Classic period were recovered, one of which was a tripod plate.

Observations: The presence of ladle censer material in a surface context in this cave indicates the ritual use of these vessels. Whether the other vessels found in Chamber E were used in the ritual/s in which the ladle censers were used or not is unclear.

References: Rodas *et al*. 1993: 91-104

(R→pp. 151-152**) Censer material:** The material included fragments of seated-effigy covers (135A-347, -605/27, 44 as recorded by Ferree in her list of figures but 135A-605/44 and 135A-322/27 PD 191 according to the information written on the figure, Figures 23 and 24a), (135A-629/27, 67, 88, Figure 24b) and (135A-352/44 and 135A/88, Figure 24c). There is also part of the effigy headdress of a seated-effigy cover recorded by Ferree as 135A-560/24 [-328] but 135A/44 and 3,

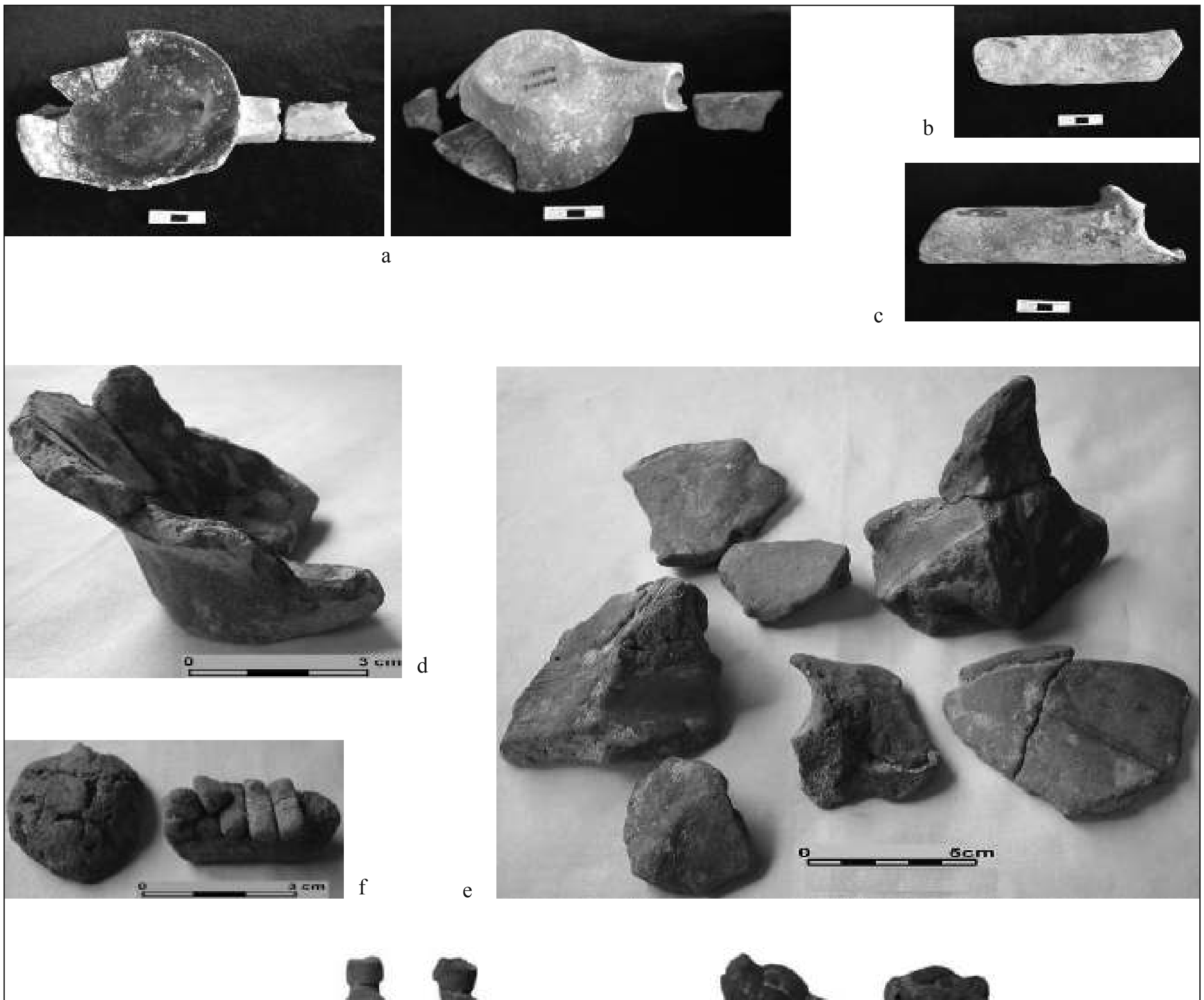


Figure 21 Material from Escondite 84, El Reinado, excavated by the Proyecto Atlas Arqueológico de Guatemala (a) ladle censer PSPI 503 (b) ladle handle PSPI 502 (c) ladle handle PSPI 663 (d) ladle censer (e and f) censer fragments (g) figurine heads (photos d, e, f, and g: after Mejía and Laporte 2004: Figs. 57-60)

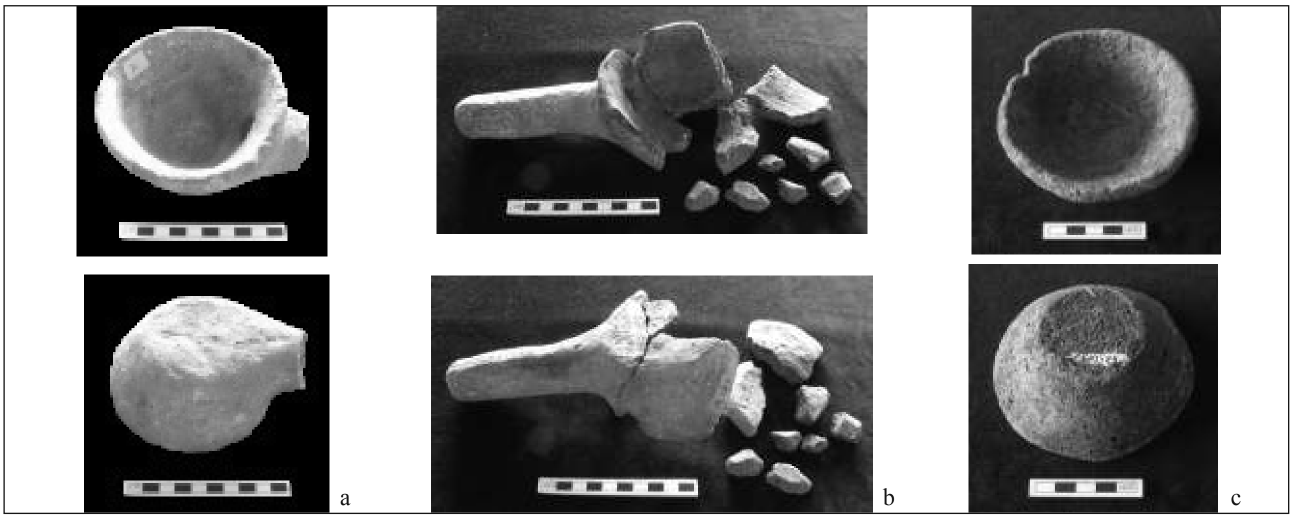


Figure 22 Material found in Chamber 12 (E) in the cave of Aktun Ak'Ab, excavated by the Proyecto Atlas Arqueológico de Guatemala (a) ladle censer container PSPI 22 (b) ladle censer PSPI 23 (c) small container with outflared walls PSPI 24

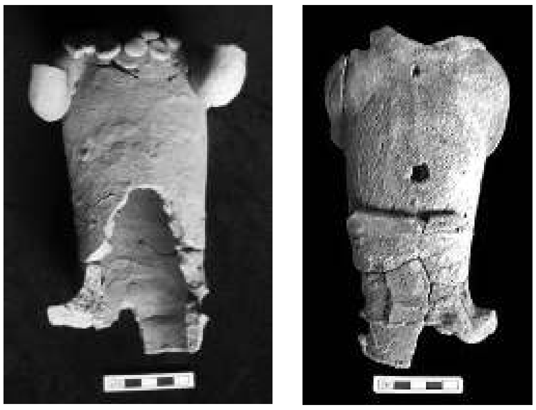


Figure 23 Fragment of seated-effigy cover 135A-605/44; 135A-322/27 from Structure SE-486, Uolantun, excavated by the Tikal Project

135A-661/88 PD 193, 135A-662/27, 135A-662/95 PD 202 as written on the headdress's fragments, Figure 27a). Associated with this context were also part of a hollow cylindrical stand with flanges and what is likely the Jaguar/Sun representation (135A/44; -618/19 as written on the stand, Figure 24d), a spiked sherd (135A-485/48, 88, not illustrated here) (Ferree 1972: Fig. 30g), two censer effigy masks (135A-597/27; -287/16,7; -297/88, Figure 25a and 135A-608/44;-587/67, Figure 25d, which was part of a flanged hollow cylinder as illustrated by Ferree 1972: Fig. 18b), the fragment of an effigy mask that may have belonged to a seated-effigy cover (135A-613/44, Figure 25c), fragments of a hollow cylindrical stand with flanges with a possible human effigy representation (135A-598/44, Figure 26a), and other censer fragments (135A-324/88, Figure 26b and 135A-319/88, Figure 25b).

Site: Uolantun

Structure designation, location, function: Str. SE-486; southwest area of Uolantun; peripheral??; temple.

Description: High, terraced structure; vaulted masonry building with two tandem rooms.

Date of censer use: Terminal Classic

Censer context: On the floor of the rooms of the temple

Observations: The materials excavated on the floor of this temple in Uolantun reflect important aspects of ritual activities carried out in this temple during the Terminal Classic period. The presence of copal, carbon, and various kinds of incense burners including seated-effigy covers, hollow cylindrical stands with flanges and the representation of what is likely the Jaguar/Sun, a spiked sherd possibly from a spiked censer, as well as other containers used to burn incense suggest that incense was burned in ceremonies carried out inside the temple. The presence of a drum suggests that music was played in the ceremonies, and several reconstructable vessels such as tripod and other plates, chilli grinders (*molcajetes*), vases, and a polychrome jar (Puleston notes 67-98-34, 67-98-35) suggest the use of food and drinks as offerings and perhaps also their consumption in ceremonies within the temple. The obsidian flake blades recovered also suggest their use as offerings and perhaps as instruments for bloodletting sacrifices in the temple.

References: Tikal Lot cards and Problematical Deposit cards

(S→p. 152) Censer material: Part of an effigy headdress from a seated-effigy cover (recorded by Ferree as 135A-560/24 [-328] but 135A/44 and 3, 135A-661/88 PD 193, 135A-662/27, and 135A-662/95 PD. 202 as written on the headdress's fragments, Figure 27a), a hollow cylindrical stand with an effigy representation (135A-711/95 and 135A-595/27, Figure 27b), and the fragment of a seated-effigy cover (12A-651/95 and 135A-321/19, Figure 27c).

Site: Uolantun

Structure designation, location, function: Str. SE-486; southwest area of Uolantun; peripheral??; temple

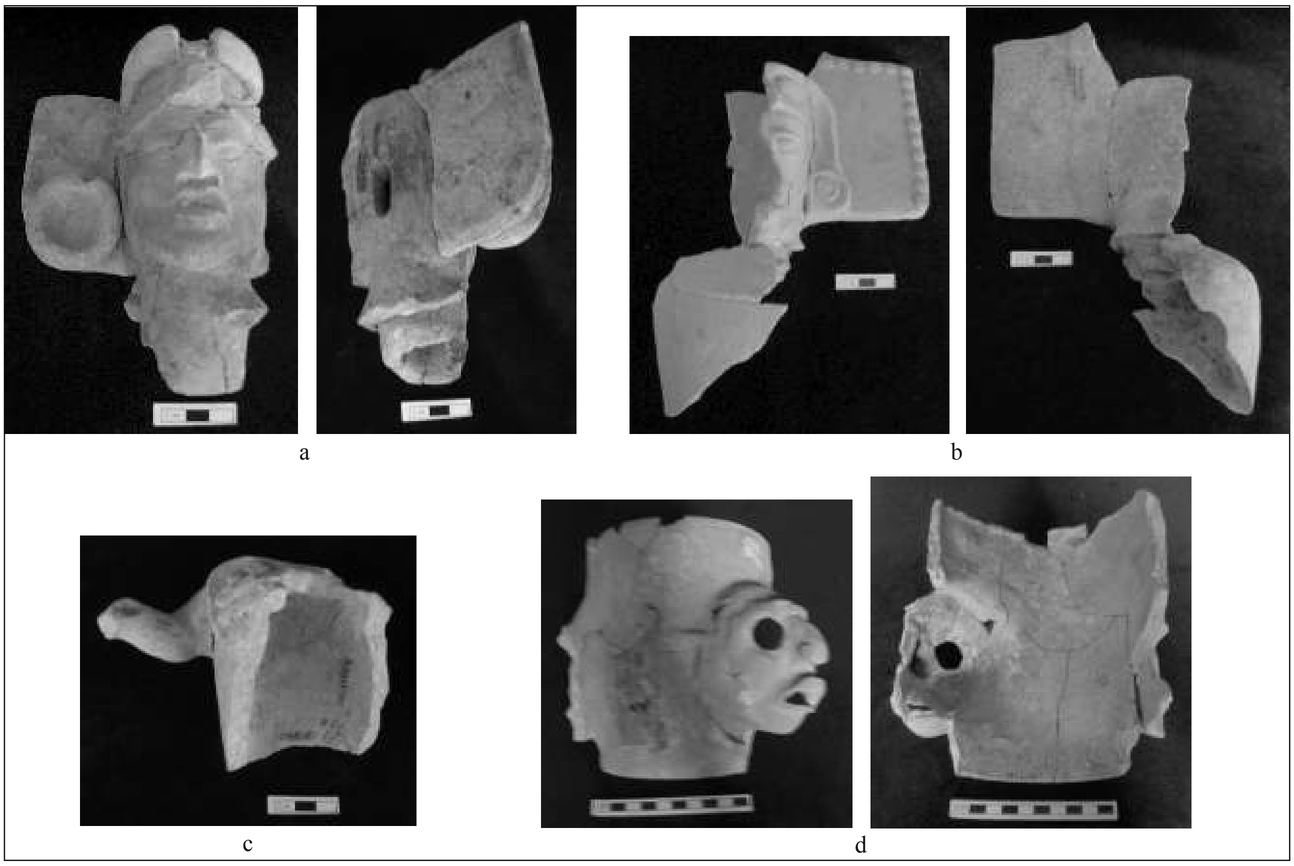


Figure 24 Censer material from Structure SE-486, Uolantun, excavated by the Tikal Project (a) fragments of seated-effigy cover 135A-605/44; 135A-322/27 (b) fragment of seated-effigy cover 135A-629/27, 67, 88 (c) effigy fragment 135A-352/44 and 135A/88 (d) censer stand 135A/44; -618/19

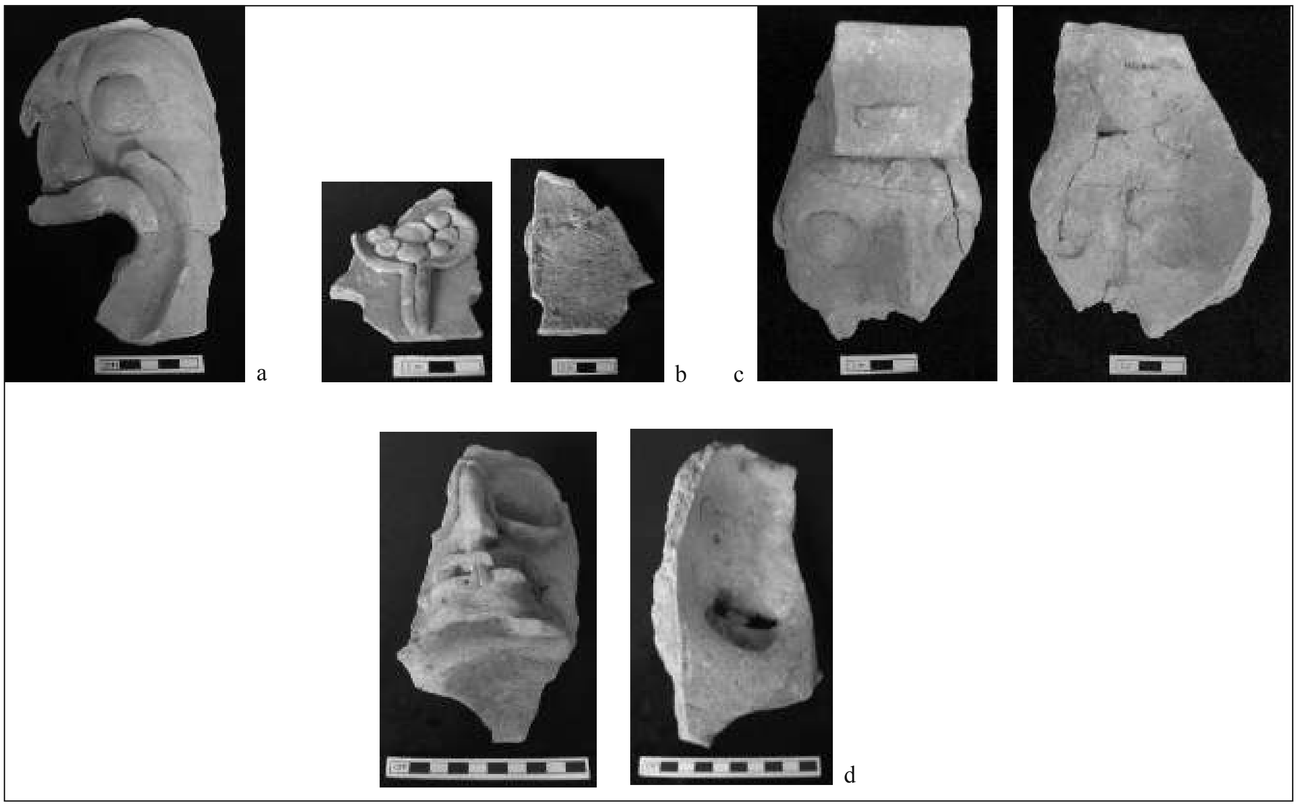


Figure 25 Censer material from Structure SE-486, Uolantun, excavated by the Tikal Project (a) censer effigy mask 135A-597/27; -287/16, 7; -297/88 (b) decorative fragment 135A-319/88 (c) effigy fragment 135A-613/44 (d) censer effigy mask 135A-608/44; -587/67 which was part of a flanged hollow cylinder as shown by Ferree (1972: Fig. 18b)

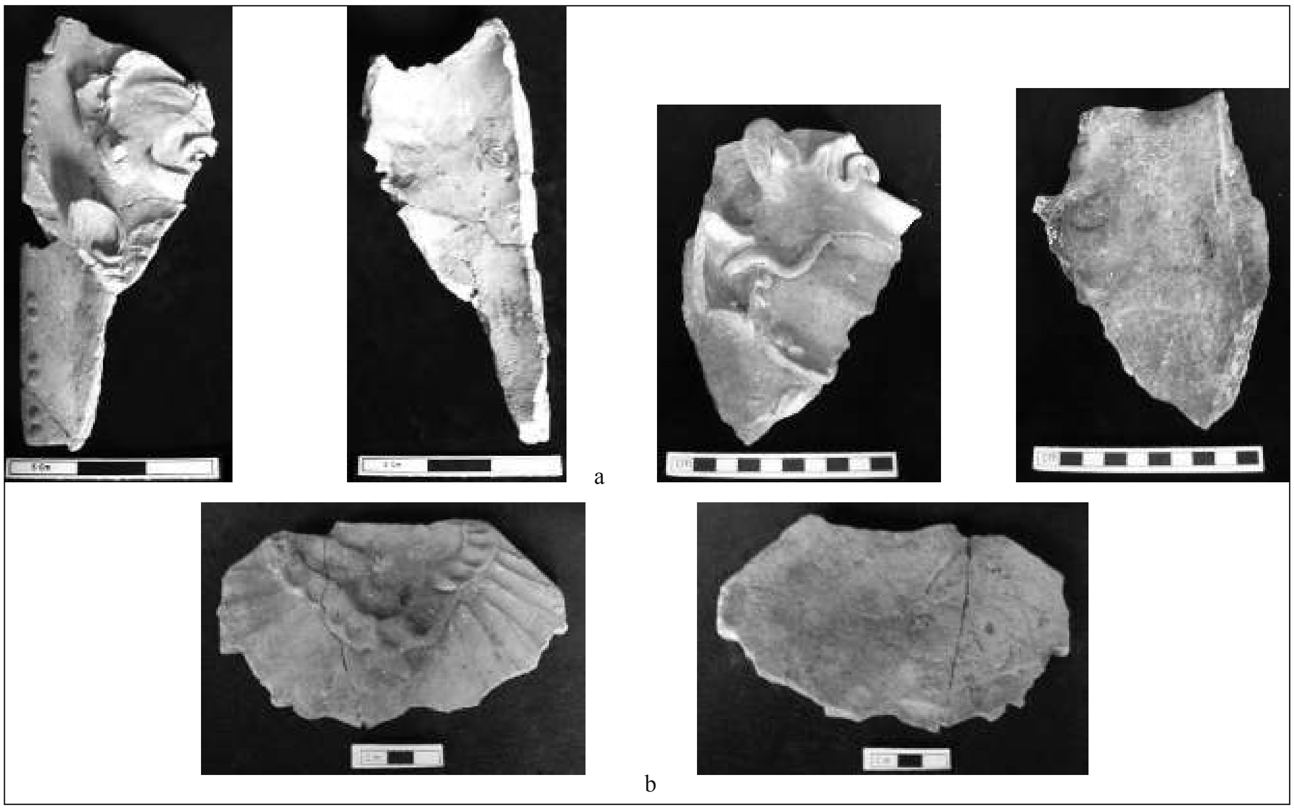


Figure 26 Censer material from Structure SE-486, excavated by the Tikal Project (a) fragments from hollow cylindrical stand with flanges and a possible human representation 135A-598/44 (b) censer fragment 135A-324/88

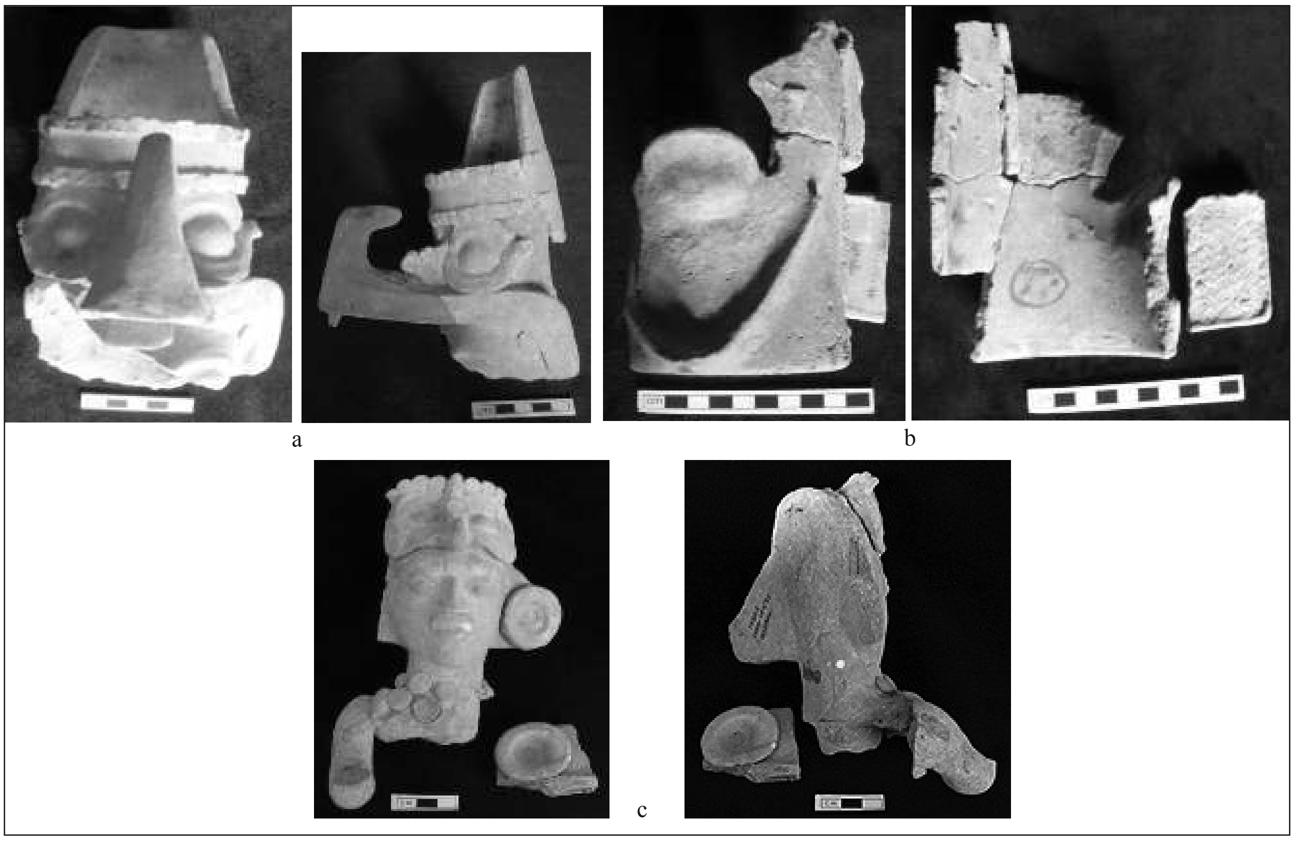


Figure 27 Censer fragments from Structure SE-486, Uolantun, excavated by the Tikal Project (a) effigy headdress recorded by Ferree as 135A-560/24 but 135A/44 and 3; 135A-661/88 PD193; 135A-662/27; 135A-662/95 PD202 as written on the headdress's fragments (b) hollow cylindrical stand with flanges and an effigy representation 135A-711/95 and 135A-595/27, and (c) fragment of a seated-effigy cover 135A-651/95 PD 202 and 135A-321/19 PD 191

Description: High, terraced structure; vaulted masonry building with two tandem rooms.

Date of censer use: Terminal Classic

Censer context: Deposit of censer fragments, sherds, and carbon intruded into the floor of the structure between the doorjambs going into the back room. The floor into which the deposit was intruded is reported to have been burned.

Observations: The context of these materials, described as a deposit of incense burners and carbon intruded into the floor of the structure suggests the interment in the temple floors of some of the materials used within the temple in ceremonies. This can be inferred from the existence of cross lot fits of some of the interred materials with lots 44 and 88 located on the floor of the rooms in the temple.

References: Tikal Lot cards and Tikal excavation operations (Philadelphia file 11/66)

(T→pp. 152-153**) Censer material:** Container with high outflared walls and triangular perforations (A-312, Figure 28a) and a vessel with high walls and an everted rim (A-313, Figure 28b).

Site: Ixtonton

Structure designation, location, function: Str. 3; Ixtonton 2 (Acropolis); Plaza A; ceremonial

Description: High, terraced structure composed of four terraces and a central stairway that leaded to a central building. The structure had two lateral shrines (*templetes*).

Date of censer use: Terminal Classic

Censer context: Cache (*Escondite 18*) placed at the foot of the Late Classic stairway of the building when it was covered during the following Terminal Classic construction phase.

Observations: The vessels described in this context may have been used as part of a ritual before the Terminal Classic construction phase as suggested by Laporte (perhaps a termination ritual).

References: (Juan Pedro Laporte, personal communication, 2006)

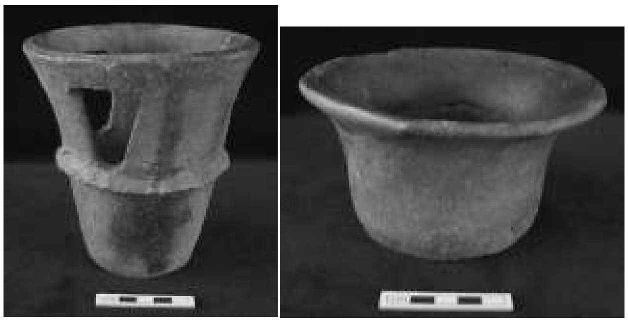


Figure 28 Material from Escondite 18, Ixtonton, excavated by the Proyecto Atlas Arqueológico de Guatemala (a) vessel with high outflared walls and triangular perforations A 312 (b) vessel with high walls and an everted rim A 313

(U→p. 153**) Censer material:** A ladle censer (lot 568, Figure 29).

Site: La Joyanca

Structure designation, location, function: Str, 6E-12; southwest of the Main Plaza; epicentre; temple

Description: High, terraced platform with a vaulted building on top with one interior room and a central doorway.

Date of censer use: Terminal Classic

Censer context: Concentration of censer fragments, charcoal, and bone fragments on the floor of the building near a cylindrical stone with carved glyphs in the axis of the doorway and near the back wall of the room. The floor, the cylindrical stone and the back wall of this sector were burnt.

Observations: The ladle censer recovered on the floor of the room of this temple suggests the ritual use of this vessel to burn incense in ceremonies within the temple, possibly in association with the cylindrical stone with carved glyphs.

References: Arnauld and Saint-Dizier 2001: 12-36

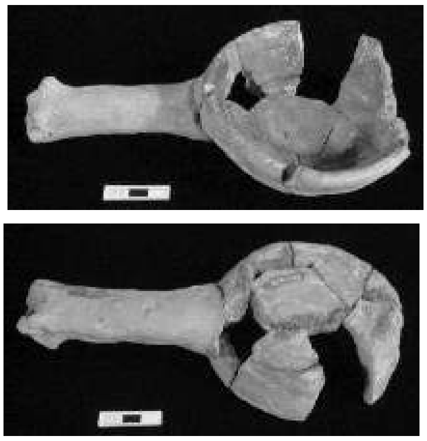


Figure 29 Ladle censer from Operation 121, Lot 568, Structure 6E-12, La Joyanca, excavated by the Proyecto Petén-Noroccidente La Joyanca

(V→pp. 153-154**) Censer material:** Ladle handles (I 494 and I 496, not illustrated).

Site: Machaquila

Structure designation, location, function: Four-lobed enclosure (*recinto cuadrilobulado*); Plaza A; epicentre; ceremonial

Description: Four-lobed enclosure consisting of a course of cut stones. It appeared to have been an open space enclosure. Only one construction phase was identified. No levels or lower sealed floors were identified.

Date of censer use: Late Classic/Terminal Classic, but more likely Terminal Classic

Censer context: A large amount of cultural material was found in the enclosure. The material included eroded censer fragments of a small size (a total of 501 of which only a sample of 20 was selected and kept in the collection of censer materials) reported as cylinder flanges, a fragment that was part of a vessel, fragments of cylinder bodies, effigy fragments, appliqué representations, and four ladle handles (two of which were addressed here since they were recorded by the author). Other ceramic materials were identified as bowls with restricted openings and handles (*ollas*), plates, vases, bowls, clay dishes (*comales*), chilli grinders (*tecomates*), and ceramic boxes. Also found were musical instruments, and flint and obsidian instruments. Some human bones were also present.

Observations: As suggested by Lacadena (2006), the use of the enclosure was ceremonial given its form, location and materials associated with it. The author notes that iconographic representations of four-lobed motifs have been given a symbolic association with the entrance to a mythical cave of origin, or representations of the interior of the cave, portals of communication to the other world, or interior sacred places. Lacadena offers several plausible interpretations regarding the function of the enclosure. The presence of utilitarian ceramics suggests the consumption of food and drink as part of the ceremony/ies conducted in association with it. In a similar way, the musical instruments and flint or obsidian instruments may have been deposited as offerings or as objects used in the ceremony/ies for music and blootletting or other sacrifices. The materials presented burned inner and outer surfaces suggesting that they were burned in the enclosure, as part of the ceremonial. The presence of human bones also suggests that there could have been human burials associated with the enclosure which were not found, perhaps due to the looting activities which were identified. Lacadena also suggests that alternatively, human sacrifice may have been part of the ceremonial activities conducted. He also notes that the ceremonies may have been associated with a cult of dynastic ancestors, calendrical events, or ceremonies of funerary function as suggested by the location of the enclosure in Plaza A which has several pyramidal structures. He also notes an association of the enclosure with Altar A from Machaquila, interpreted as a turtle related to the myth of resurrection of the Maize god.

References: Lacadena 2006

6.3. LATE CLASSIC AND/OR TERMINAL CLASSIC PERIODS

(W→p. 154) Censer material: Censer fragments from lots 1165 (Figure 30a), 1188 (Figure 30b) and 1195 (Figure 30c) from a hollow cylindrical stand with flanges and an effigy representation. A hollow cylindrical stand with a standing human effigy representation (Figure 31a) and censer fragments (Figures 31b and c) from what appears to be another hollow cylindrical stand from lots 1142 and 1165, an effigy censer with flanges (Figure 32a) and various censer fragments from lot 1142, an effigy fragment from lot 1168 (Figure 32b), and the fragment of an effigy vessel with base (Figure 32c).

Site: La Joyanca

Structure designation, location, function: Str. 6E-6; southeast side of the Main Plaza; epicentre; temple.

Description: High, terraced platform with a vaulted building on top with one interior room.

Date of censer use: Late Classic or Terminal Classic

Censer context: Censer fragments, flint fragments, and small and burnt limestones were found in lots 1165, 1168, and 1142. The material was located on the floor and in a recess in the back wall of the room of the temple in front of the room's entrance. Lot 1195 was located at the base of the structure's stairway below collapse. A deposit of censer fragments, fragments of shell and flint, and obsidian blades was found in this lot.

Observations: The censer material from lots 1165, 1168, and 1142 (including a hollow cylindrical stand with a standing human effigy representation, fragments from other cylindrical stands, and an effigy vessel with base) found on the floor and in a recess in the back wall of the room of the temple appears to have been part of an occupation deposit dated to the Terminal Classic period. The context illustrates the ritual use of these types of censers within temples. The censers in the recess of the back wall were in situ, suggesting that they would have been kept in this place within the temple when not in use, perhaps as objects of veneration.

The material from lot 1195 at the base of the structure's stairway below collapse could be interpreted as having been used at the base of the stairs. Alternatively, it may have fallen from upper levels of the structure.

References: Ponciano 2001: 37-62; Ponciano 2002: 42-53

(X→p. 154) Censer material: A hollow cylindrical stand with flanges and what is likely a Jaguar/ Sun representation (3A-88/6, 9, Figure 33a), a hollow cylindrical stand with flanges and an effigy representation (3B-37b/5 and 3A-97/6, Figure 33b), and a fragment of a censer effigy mask (3B-37a/5, Figure 33c).

Site: Tikal

Structure designation, location, function: Str. 7F-30; Group 7F-1; about 1 km southeast of Tikal's epicentre; shrine or small temple.

Description: High, terraced platform (approximately 5.92 m high) above Floor 1 with stairway on its west side and a vaulted masonry building resting on it.

Date of censer use: End of Late Classic/Terminal Classic

Censer context: The censer material was found in the core of a frontal platform overlying the basal step of the stairway of structure 7F-30. A tomb was found underlying the platform that had been cut through Floor 1 before the platform was built.

Observations: The context of these hollow cylindrical stands with flanges and an effigy representation (one of which appears to be a Jaguar/Sun representation) in the hearting/core of a frontal platform overlying the basal step of the stairway of Structure 7F-30 (likely to

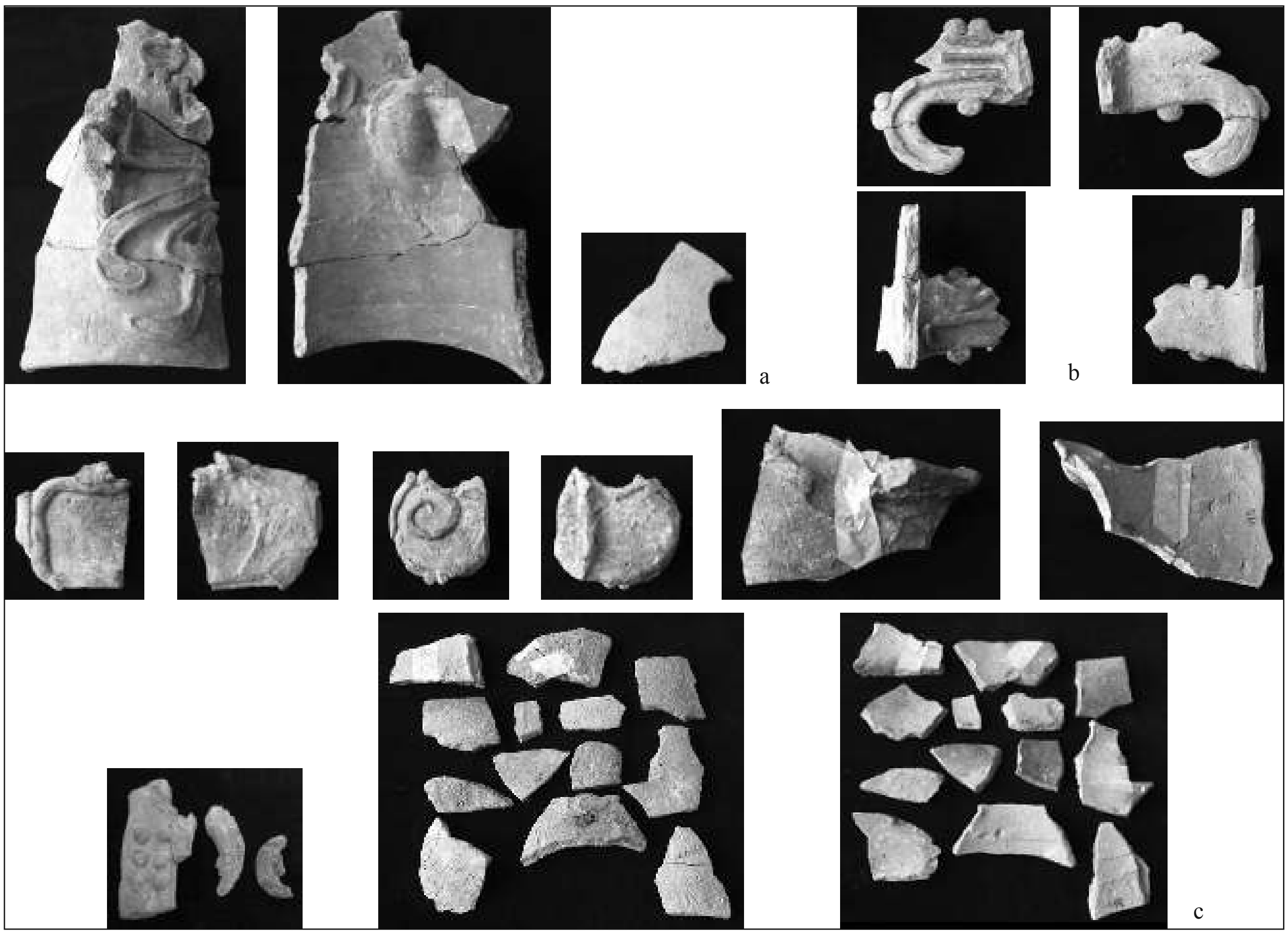


Figure 30 Censer material from Structure 6E-6, La Joyanca, excavated by the Proyecto Petén-Noroccidente La Joyanca in operation 122 (a) censer fragments from lot 1165 (b) censer fragments from lot 1188 (c) censer fragments from lot 1195

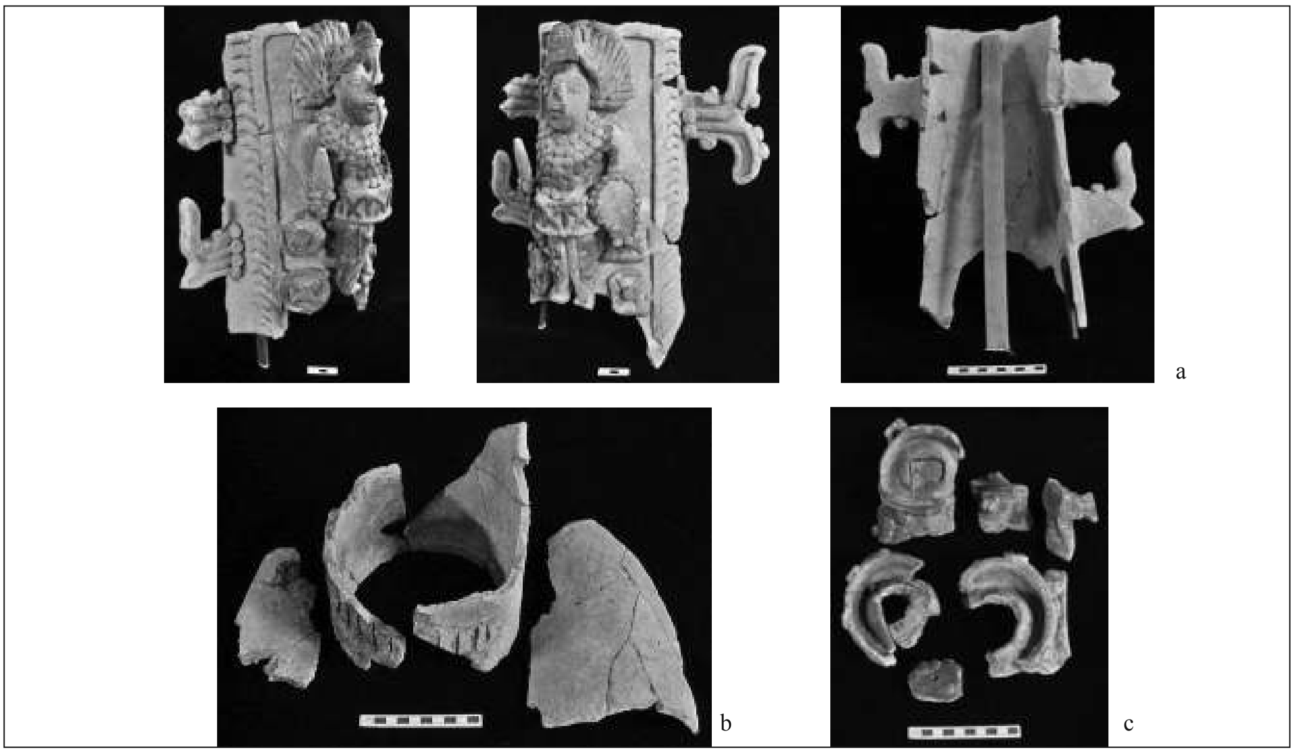


Figure 31 Censer material from operation 122, lots 1142 and 1165, Structure 6E-6, La Joyanca, excavated by the Proyecto Petén-Noroccidente La Joyanca (a) Hollow cylindrical stand with standing human effigy (b and c) censer fragments

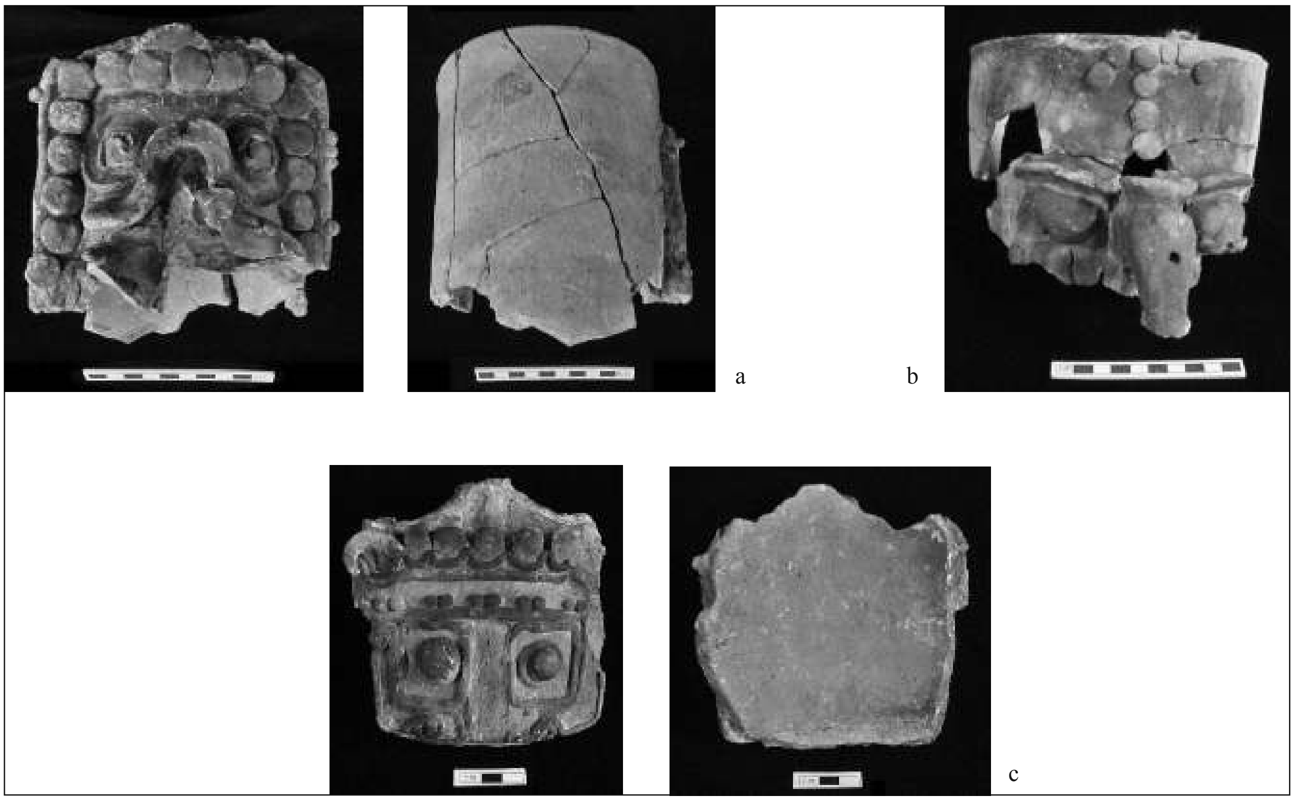


Figure 32 Censer material from Structure 6E-6, La Joyanca, excavated by the Proyecto Petén-Noroccidente La Joyanca (a) effigy specimen with flanges from operation 122, lots 1142 and 1165 (b) effigy fragment from Operation 122, lot 1168 (c) fragment of effigy vessel with base also found in temple's room

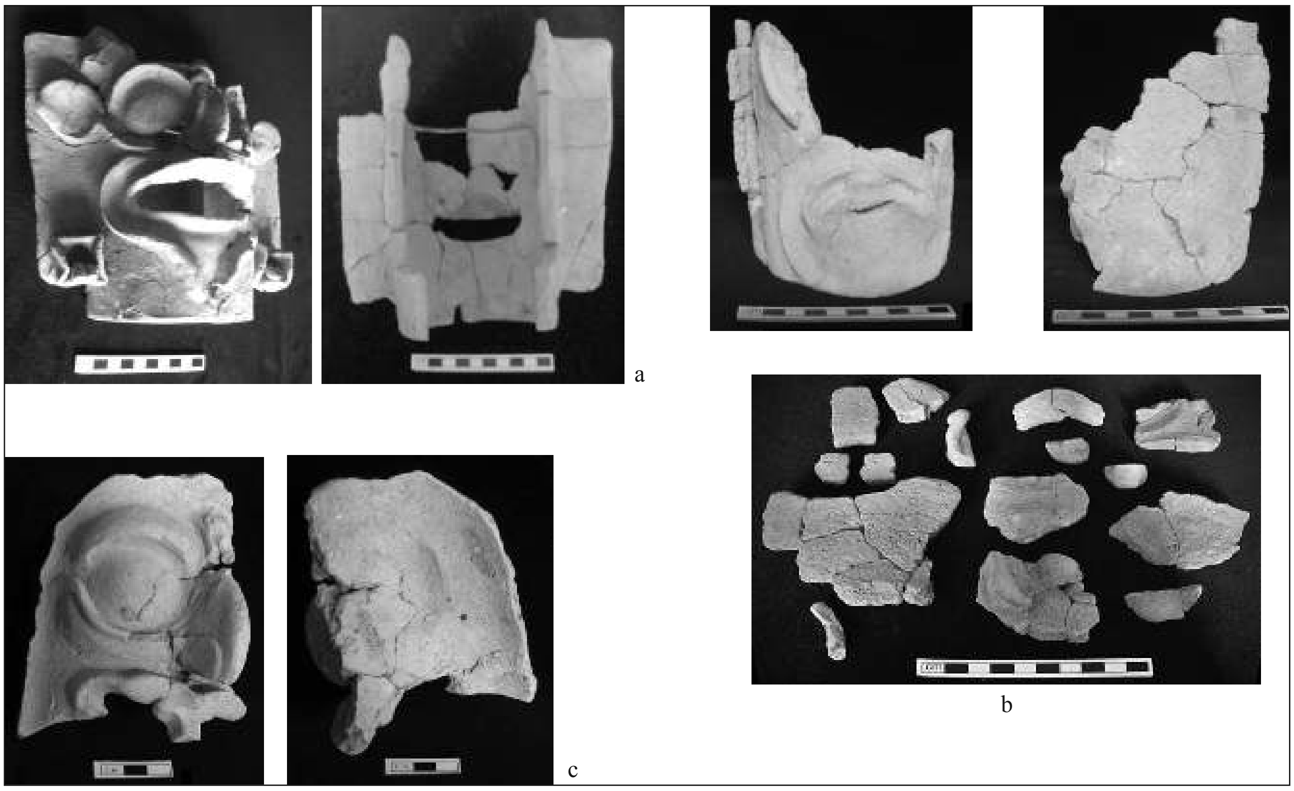


Figure 33 Censer fragments from Structure 7F-30, Group 7F-1, Tikal, excavated by the Tikal Project (a) hollow cylindrical stand with flanges and what is likely a Jaguar/Sun representation 3A-88/6, 9 (b) 3B-37b/5 and 3A-97/6 (c) censer effigy mask 3B-37a/5

have been a shrine or small temple) covering Burial 1, suggests a possible association of the use of these censers in a ritual related to the burial before the platform was constructed, or during the time of its construction. The context also suggests the use of hollow cylindrical stands with flanges and the Jaguar/Sun representation in small temples or shrines such as this one during the Terminal Classic period.

References: W.R. Coe and Broman 1958

6.4. TERMINAL CLASSIC OR POSTCLASSIC PERIOD

(Y→pp. 154-155**) Censer material:** Four containers with outflared walls, a censer fragment whose representation was identified as an individual with a bat headdress and a pectoral with a bat face, the fragment of a possible lid representing an old individual wearing a necklace, and a dog figurine. All materials were catalogued as Element 2712 (Figures 34-36).

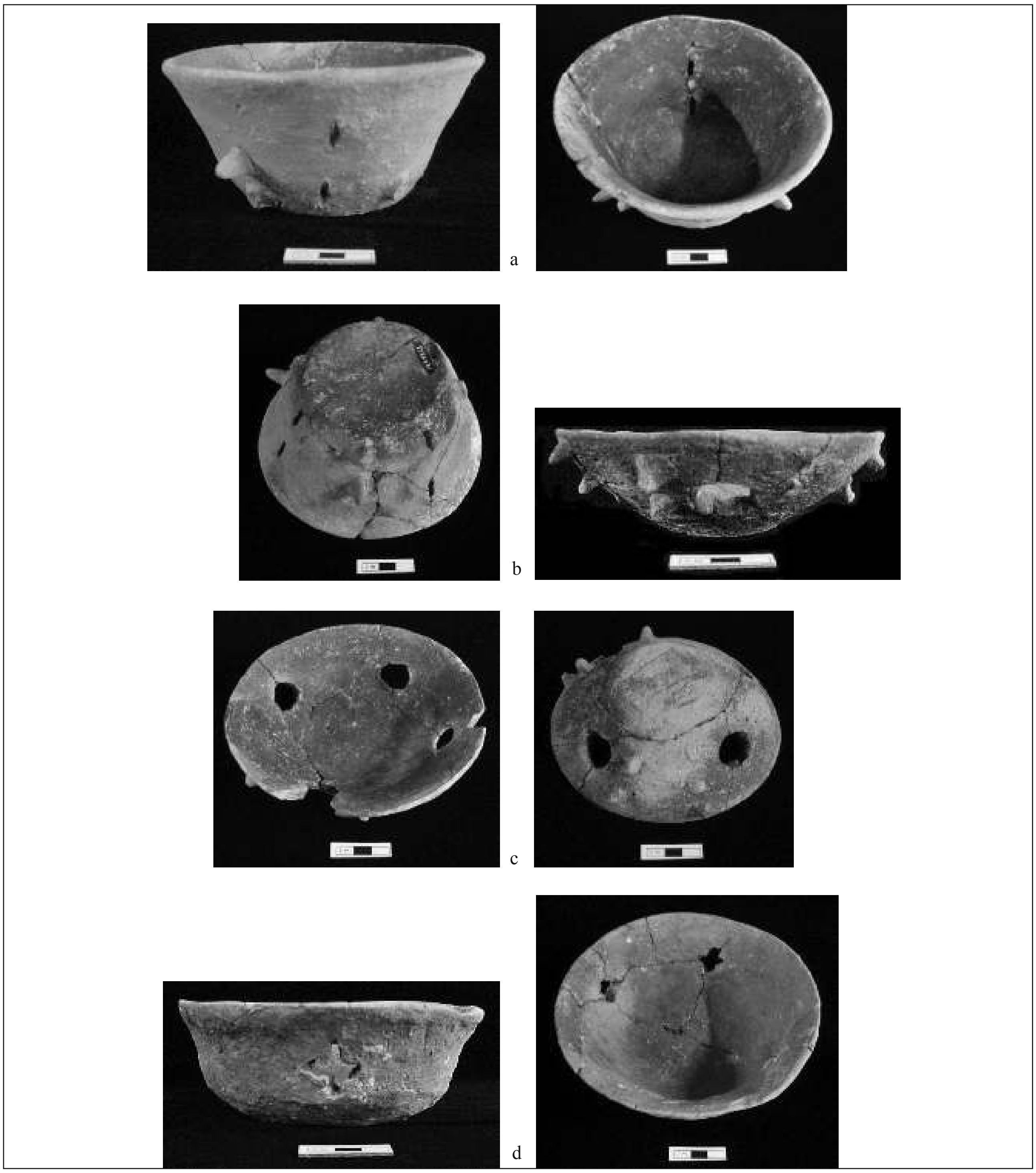


Figure 34 Vessels from Element 2712, Structure 6E-1, La Joyanca, excavated by the Proyecto Petén-Noroccidente La Joyanca

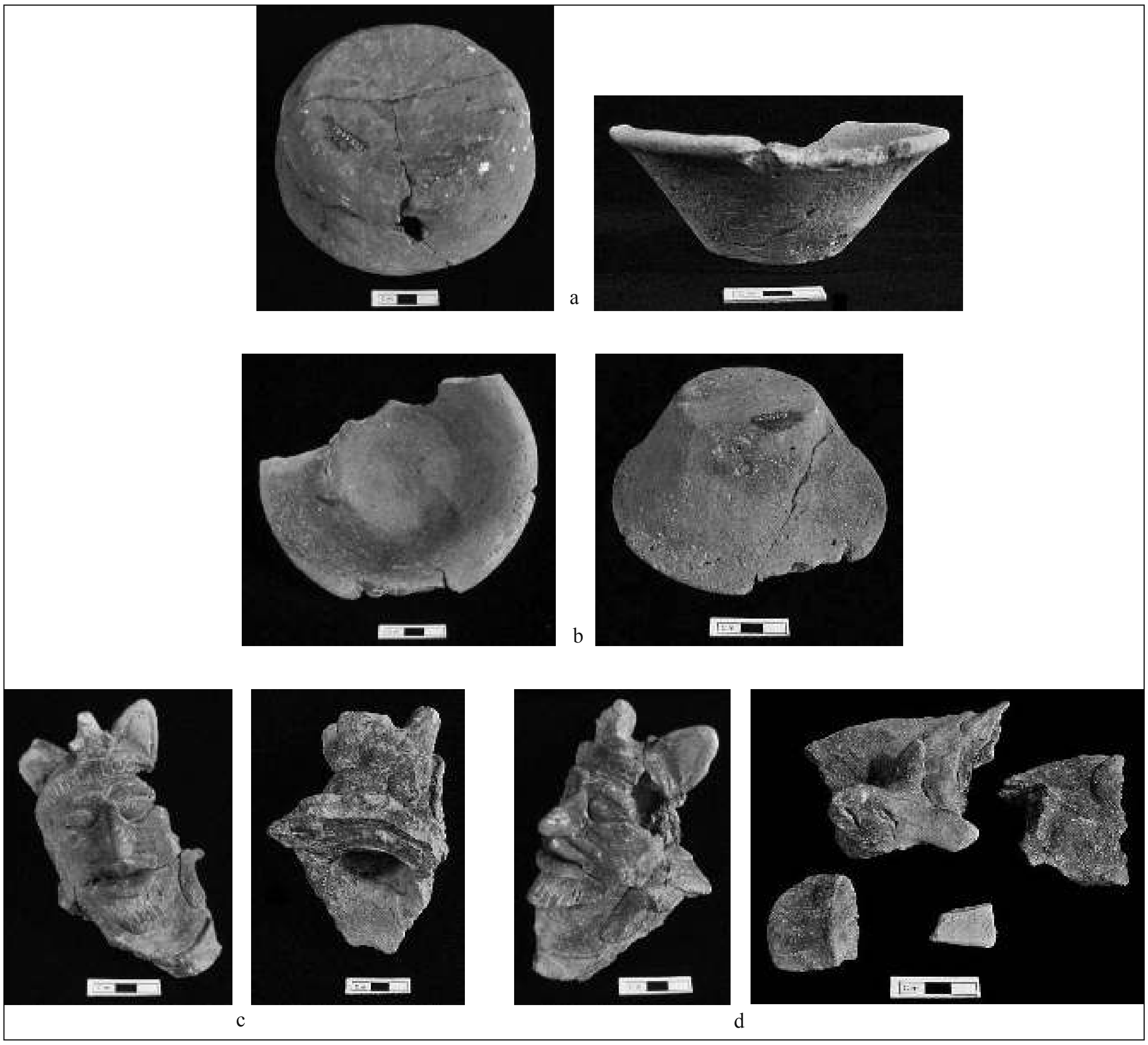


Figure 35 Vessels and other materials from Element 2712, Structure 6E-1, La Joyanca, excavated by the Proyecto Petén-Noroccidente La Joyanca

Site: La Joyanca

Structure designation, location, function: Str. 6E-1; north of the Main Plaza; epicentre, unknown function.

Description: Substructure of two platforms with building resting on top of them; had access to the north. The building had a stairway which linked it with an east-west platform extension that had two small mounds of unknown function. In its interior, the building had two small quadrangular structures of unknown function (in its west and east part) united by a wall with a niche. The structure did not face the plaza to the south.

Date of censer use: Terminal Classic or Postclassic

Censer context: Element 2712 was found within a niche on the wall that united two squared features (perhaps benches) and which was located on the central axis oriented to the north. The element was found within a layer of very dark greyish brown and not very compact humus composed of pottery, flint flakes and obsidian, a figurine, and charcoal.

Observations: The function of Structure 6E-1 located in the north of the Main Plaza of La Joyanca where element 2712 was found is not clear. However, the in situ presence of element 2712 composed of four containers with outflared walls probably used as incense burners (see Section 9.3.9), a censer fragment with the representation of an individual with a bat headdress and a pectoral with a bat face, a dog figurine, and the fragment of a possible lid representing an old individual wearing a necklace in a niche in a wall suggests that the censers would have been kept in this place when not used during an occupation of the structure dated to the Terminal Classic or Postclassic period.

References: Arnauld and Arredondo 2002: 54-75

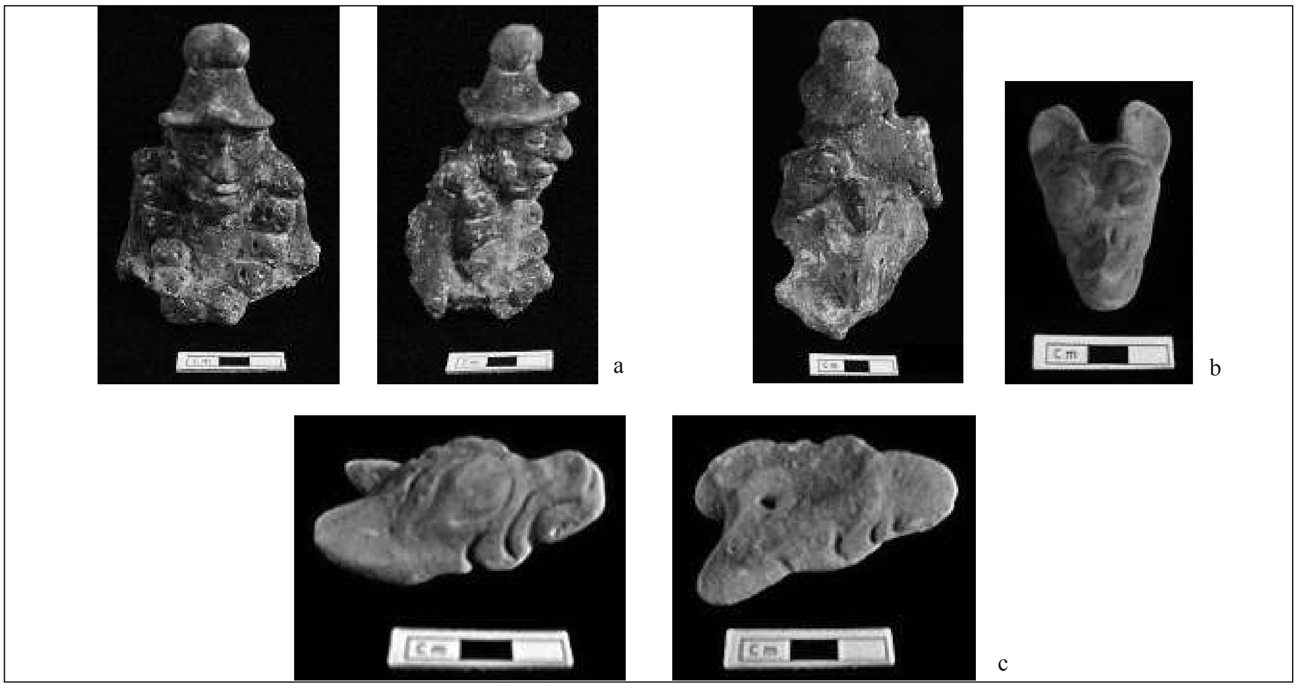


Figure 36 Further material from Element 2712, Structure 6E-1, La Joyanca, excavated by the Proyecto Petén-Noroccidente La Joyanca

6.5. POSTCLASSIC PERIOD

(Z→p. 155**) Censer material:** Ladle censer A-324 (Figure 37a) and censer fragments (Figure 37b).

Site: Ucanal

Structure designation, location, function: Structure D3; east side in Group D, located on the south end of the site (within Central Area), on the top of a hill; ceremonial

Description: High, terraced structure with a stairway and a flat surface on top. The structure corresponds to a fourth construction phase in which a temple like building composed of two rooms possibly constructed during Terminal Classic times was covered.

Date of censer use: Postclassic

Censer context: Cache (*Escondite 70*) located in the fill of the rooms of the temple like building possibly dated to the Terminal Classic period.

Observations: The presence of the complete ladle censer and other censer fragments described as an '*escondite*' in the fill of the rooms of a construction which was covered by a later construction suggests that the censers may have been placed as part of a termination ritual carried out during the latest construction phase of the Structure dated to the Postclassic period. Both structures were ceremonial.

References: Corzo *et al*. 1997: 79-124; Laporte and Mejía 2002: 14-15

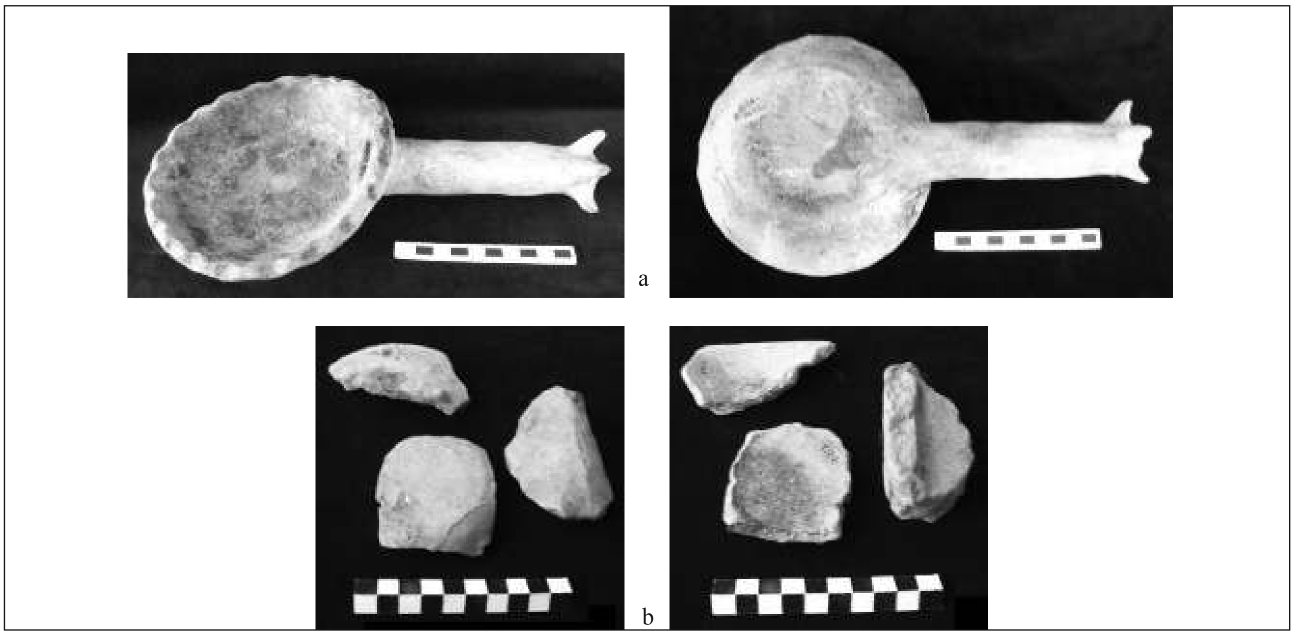


Figure 37 Censer material from Escondite 70, Ucanal, excavated by the Proyecto Atlas Arqueológico de Guatemala (a) ladle censer A-324 and (b) censer fragments

7. A TYPOLOGICAL AND DISTRIBUTIONAL ANALYSIS OF CENSERS AND CONTAINERS ASSOCIATED WITH BURNED INNER SURFACES

In this chapter I present a typological and distributional analysis of censers and other vessels that have commonly been regarded in the literature as incense burners, which have burning evidence on their inner surfaces but whose function still needs clarification (the function of the different categories is addressed in Chapter 9). In the typological analysis conducted for this study I have classified the censers and these other vessels into groups on the basis of their similarities in form and decoration. The materials have been classified into a) ladle censers; b) hollow cylindrical censer stands with flanges and a central modelled effigy representation (which include hollow cylindrical stands with flanges and the Jaguar/Sun representation, hollow cylindrical stands with flanges and a human portrait representation, hollow cylindrical stands with flanges and a central modelled full standing figure, and hollow cylindrical stands with flanges and a central modelled seated figure representation); c) tubular cylindrical stands (or containers?) with flanges, a solid base, and a central modelled effigy representation; d) vases with an effigy face; e) pedestal-based censers (which include flanged zoomorphic pedestal-based censers as well as spiked pedestal-based censers); f) three-pronged supports; g) containers with outflared walls; h) vessels with high walls and everted rims; i) spiked bucket-like vessels with flared walls; and j) seated-effigy covers. The classification involves complete specimens, as well as complete parts of specimens which used to be assembled with other parts.

The aim of the distributional analysis is to discuss the associations of specific kinds of censers with particular structures, and from sites' epicentres vs. settlements at some distance from the presumed main ceremonial and administrative architecture of sites. Attempts are also made to discuss the distribution of different kinds of censers from residential, religious and public/administrative architecture.

The selection of censer materials for the distributional analysis was made considering all the materials recorded during my fieldwork in Guatemala as well as some materials recorded at the British Museum. The sample used for the analysis involves materials dated from the Late Classic to the Early Postclassic period, which were recovered from primary contexts as well as some secondary contexts. The censer material from primary contexts consists of all the materials presented in the previous chapter that are considered to have been intentionally deposited by the Maya in contexts such as burials, caches and on the floors of structures. Censer material from secondary contexts involve cases in which the censers were not strictly speaking *in situ*, but that can be considered to be associated with the particular structures where they were found and dated with a high level of confidence. The sample used in the distributional analysis consists of materials which have been kept in the ceramic collections of the different projects or in museums and which I have had access to. Materials which have been reported by the archaeological projects but discarded before I could see them were not included in this or the previous chapter. As was the case for the contextual analysis, only fragments larger than 15 cm have been included in the sample. Tripod vessels were not included in this analysis given that I considered the use of the tripod vessels I have seen (from the Cenote of Chichen Itza) as incense burners unlikely, having probably served as containers for incense offerings.

With the exception of the contexts of censers found on the floors of structures, which sometimes showed some admixture of ceramic sherds from earlier periods, probably from the core of the collapsed walls of buildings, censer materials excavated in lots which contained associated ceramics diagnostic of more than one period, which included Early Classic and/or Preclassic ceramics, were not considered owing to the mixed and hence non-primary nature of the deposits. The dating of the materials in primary contexts given by the archaeologists based on their interpretations was presented in Chapter 6. Information about the chronology of censers considered to be from secondary contexts is presented in this chapter and is drawn from publications or reports or from other information provided by the archaeologists of each project.

The censer sample for the distributional analysis is broader than the sample in the previous chapter, which was intended to present censer materials in primary contexts for the purposes of identifying specific ritual contexts in which the censers were used through time. For a distributional analysis, however, the criterion is that the censers are associated with the structures where they were found, provided that their contexts allow for the dating of the materials with a high level of confidence.

In the following section, the basic contextual and chronological information of the materials selected for the analysis, classified on the basis of their form and decoration, is presented in tables. Each table is preceded by a general description and background of the kind of censers addressed and is followed by a discussion of the contexts where the censers in my sample were found. The information is then complemented with that of similar censers from sites in the Maya lowlands recovered in primary contexts which I have not personally recorded during my fieldwork but which have been published with illustrations or photographs, and whose contextual information may be compared or may be added to that of the censers presented in the table. This is followed by a general conclusion of the distribution of the censers discussed.

The information in the tables is organized under the following categories: Catalogue Identification Number, Project, Site, Context Identification, Context Information, Assigned Period, Fragmentation, and Figure Number. Note that 'Fragmentation' refers to the *completeness* of the materials. The field's data types that I have chosen for this category are: 'complete', 'semi-complete', 'incomplete', and 'fragment'. 'Complete' is used when an object is approximately 95% complete. 'Semi-complete' is used in cases when the object is more than 60% and less than 95% complete, 'incomplete' refers to a 30% to 60% presence of the object, and 'fragment' is used for instances when less than 30% of the object is present.

7.1. LADLE CENSERS[12]

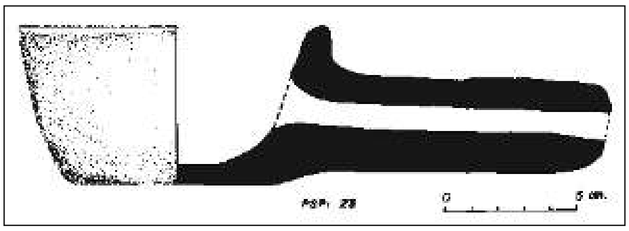


Figure 38 Censer PSPI 23, Proyecto Atlas Arqueológico de Guatemala (drawing: Jorge E. Chocón)

7.1.1. Description and background

The ladle censer materials selected for this analysis consist of specimens dated to the Late Classic, Terminal Classic and Early Postclassic periods. During the Late Postclassic period ladle censers continued to be used at least in some sites of the Maya lowlands, such as Lamanai and Mayapan. A probable 16th century tomb from Lamanai (the Hunchback tomb) contained ladle censers (Pendergast, personal communication 2007) suggesting the continued use of these vessels until the time of the conquest, at least in some areas of the Maya lowlands. Ladle censers continued to be used until recent times by Lacandon people (Tozzer 1907). In Coban and Alta Verapaz, the use of a vessel with a flat handle that resembles a ladle censer to burn incense has also been reported in recent times (Reina and Hill 1978: 123, Fig. 38d).

Late Classic, Terminal Classic, and Postclassic ladle censer materials have been reported from various Maya sites in the central and southern Maya lowlands. At Seibal, ladle censer sherds have been assigned to Bayal contexts (A.D. 830-930) considered to be Terminal Classic and were found in association with Fine Paste ceramics (Sabloff 1975: 179). The ladle censer material from Altar de Sacrificos was assigned to the Pasion and Boca Complexes (Adams 1971: Charts 9 and 10), something which would suggest the presence of ladle censers during the Late Classic period. At Uaxactun, two fragments of ladle censers recovered from surface contexts were classified as Tepeu 3 (R.E. Smith 1955, Fig. 19 c, 5; 66 b, 2, 3) suggesting a Terminal Classic date for the censers. Ladle censer materials from Piedras Negras have been reported by Rene Muñoz (2008) to belong to the Chacalhaaz ceramic phase (A.D. 750 – 850) assigned to the Late Classic period. At Yaxchilan, ladle censer materials have been assigned to the Yaxmuc Complex (A.D. 732-810; 9.15.0.0.0.-9.19.0.0.0.) the beginning of which is marked by the introduction of Fine Paste ceramics and which has been dated to the Terminal Classic period (López 1989: 176-177, Fig. 57). Based on a few fragments present in the collection of Quiriguá, Benyo (1979: 39) suggested that during CS3 to CS2 construction phases, ladle censers were more numerous at this site (the earliest construction phase in Quiriguá being CS4 assigned to the Middle Classic period and the latest being CS1 assigned to the Terminal Classic period (A.D. 550-850)). According to the author, the censers are almost never found in earlier contexts and their numbers decrease substantially in later times. The earliest date suggested by Bernard Hermes for ladle censer materials from Topoxte and Yaxhá is the Terminal Classic period, which is characterized by the Tolobojo Complex. Ladle censers from Topoxte have also been identified as part of the Isla Complex, which is Middle Postclassic (Bernard Hermes, personal communication 2007). The excavations conducted at the nearby Isla de Flores by the Proyecto de Alcantarillado revealed the presence of ladle censer materials which were assigned to the Chilcob Complex (A.D. 960-1150) (Hermes 2004). At Macanche, a modelled censer handle was assigned to the Aurora Complex, dated to the Early Postclassic period (P.M. Rice 1987: 179, 94). Also from the same site, a complete handle and the sherd of a possible ladle censer were assigned to the Dos Lagos and Ayer Complexes, dated to Late Postclassic and Protohistoric times (P.M. Rice 1987: 178).

---

[12] Vessels commonly identified as 'trough-handle ladle censers' are not included in this section. These vessels have a long, 'flatish' trough in the handle which has low and thick sides, and have a small dish. The form of these objects differs from the general forms of ladle censers, and their function, which is not clear, is likely to have been different from that of ladle censers. 'Trough-handle ladle censers' have been reported from the site of Uaxactun where they were assigned to the Tzakol sphere dated to the Early Classic period (R.E. Smith 1955: Fig. 84a). They have also been found at Tikal, where they were assigned to the early and late facet of the Kataan Complex dated to the Early Classic period (Ferree 1972: 74).

7.1.2. Distribution of ladle censers in my sample

Table 5 Distribution of ladle censers

Catalogue ID	Project	Site	Context ID	Context Information	Assigned Period	Fragmentation	Fig. No
5D-5-25-9B	Proyecto Templo V	Tikal	5D-5-25-9	Temple V, Burial PTV-2, excavated in bedrock in the axis of the upper room	early Late Classic (A.D. 600±50)	Semi-complete	15
Lot 568	Proyecto La Joyanca Petén-Noroccidente	La Joyanca	Op. 121, Lot 568	Main Plaza, Structure 6E-12, on Floor 1 of the temple's room	Terminal Classic (Tuspan Complex)	Semi-complete	29
PSPA 324	Proyecto Atlas Arqueológico de Guatemala	Ucanal	86-75-1	Group D, Structure D3, east side, *Escondite* 70	Postclassic	Complete	37
PSPI 502, 503, 663, and container (ID N/A)	Proyecto Atlas Arqueológico de Guatemala	El Reinado	268-13-2	Acropolis, Southwest structure, *Escondite* 84	Terminal Classic	Semi-complete	21a-d
87-25	Proyecto Altar de Sacrificios	Altar de Sacrificios	90(A)3	Residential structure (Mound 24), Cache 53, level 3	likely Terminal Classic (Late Boca phase A.D. 830-909)	Complete	18
PSPI 22 and 23	Proyecto Atlas Arqueológico de Gueatemala	Aktun Ak'Ab	30-12-13-1	Aktun Ak'Ab cave, chamber 12 (E)	Terminal Classic	Semi-complete	22a, b
PSPI 494, 496, 497 and 498	Proyecto Atlas Arqueológico de Guatemala	Machaquila	Operation 69	Four-lobed enclosure, Plaza A	Late Classic/ Terminal Classic	Incomplete	N/A

7.1.3. Structure/context summary

The ladle censers presented in Table 5 were intentionally deposited in the following contexts: associated with high, terraced platforms (pyramids) at the sites of Tikal, and Ucanal; on the floor of a temple building supported by a high, terraced platform at La Joyanca; in the southwest structure of Plaza A in the Acropolis of the site of El Reinado; in a residential structure of a residential settlement area at Altar de Sacrificios; in the cave of Aktun Ak'Ab located in the Upper Basin of the Mopan River in southeastern Peten; and in the four-lobed enclosure of Plaza A at Machaquila.

Some of the ladle censers depicted in the table were recovered from high, terraced platforms and the buildings supported by them in epicentral areas of sites. These were found in three types of contexts: in a burial, on the floor of the building supported by a platform, and as a cache. The censer in the context of a burial was recovered from Structure 5D-5 in the ceremonial centre of Tikal and was dated to the early Late Classic period. The burial was placed in bedrock on the axis of the upper room of the temple and was made after the construction of Floor 2 of the basal platform (Section 6.1, K). The censer recovered from Structure 6E-12, located in the Main Plaza of La Joyanca, was found on the floor of a vaulted building supported by a high, terraced platform and was dated to the Terminal Classic period (Section 6.2, U). The censer in the context of a cache was dated to the Postclassic period and was found in the core of a high, terraced platform with a flat surface, on top of which a building was not found, in Group D at Ucanal—a group located in the south extreme of the central area of the site, an area associated with ceremonial and residential architecture (Section 6.5, Z). These data would suggest continuity in the use of censers associated with activities tied to high, terraced platforms (or buildings supported by them) from the early Late Classic period to Postclassic times.

The remaining ladle censer materials were recovered from the following contexts: in a possible residential structure in a level assigned to the Terminal Classic period at Altar de Sacrificios; in the four-lobed enclosure of Plaza A at Machaquila as a deposit of incensarios and other materials dated to the Late Classic or Terminal Classic period; and in the cave of Aktun Ak'Ab in the Municipality of Dolores, in southeastern Peten in a context dated to the Terminal Classic period.

The information above suggests the use of incense burners in epicentral areas as well as in areas at some distance from the main public/administrative and religious centres of sites. The use of ladle censers in different areas of archaeological sites is also suggested by the various fragments of ladle censer materials present in the collection of the Proyecto Atlas Arqueológico de Guatemala which were not included in this analysis due to their small size and less secure dating. Nonetheless, fragments from this collection were recovered from the main ceremonial areas of different sites, as well as from groups at various distances from the sites' epicentres, such as in Group 47 at Ucanal, and Groups 116, 117, 118, and 118-A at Calzada Mopan. Similarly, ladle censer materials from Quiriguá have also been recovered from the site's core and its periphery (Benyo 1979: Tables 1 and 2).

As previously mentioned, there seems to be a continuation in the use of ladle censers in association with high, terraced platforms and their superstructures from the early Late Classic period to the Postclassic period. The ladle censers of Aktun Ak'Ab serve as an indication that these kinds of vessels would have also been used in caves, at least during Terminal Classic times. The censers were also used in association with a four-lobed enclosure during the Late Classic or Terminal Classic period. The data also suggests the use of ladle censers in residential structures based on the censer found in Altar de Sacrificios dated to the Terminal Classic period. This censer may have been associated with a domestic altar or a burial. The type of contexts where the materials were found suggests that the ladle censers were used in rituals not necessarily limited to elites.

7.1.4. Evidence from other sites

7.1.4.1. Ladle censers in burial contexts

The presence of ladle censers in burials has been reported in various sites in the Maya lowlands. At the site of Becan, thirteen ladle censers and an effigy pedestal-based censer with flanges were found in the chamber Burial 69-1 in Room 3-9 of Structure IV, [a monumental 35-room 'palace' structure in the Great Southeast Plaza of the site]. The burial, which contained various other vessels, was dated to the Terminal Classic period, its ceramic assemblage having been assigned to the early facet Xcocom (Ball 1977: 149, Figs. 47 and 48a)[13]. Ladle censers have also been recovered in burials at the site of Lamanai, where they were dated to the Early Postclassic Buk phase, as well as to the Late Postclassic and the 16th century. In particular, Burial N10-4/ 5 was assigned to the Buk phase and contained a pedestal-based censer and a ladle censer (David Pendergast, personal communication 2007).

At Copan, one complete and another semi-complete ladle censer—as well as a partially reconstructed effigy pedestal-based censer—were found in Burial 58/3/1 in Structure 11L-137. The structure was located in the south of an open communal plaza area and consisted of a platform 6 meters wide and approximately 20 meters long with a building resting on it. The building also contained an outset building that 'abutted' the rear wall of the platform, approximately centred along the long axis of the building measuring approximately 4 metres on each of its sides. The burial was dated to the Early Postclassic period based on its associated vessels which were assigned to the Ejar Complex ceramic assemblage (Manahan 2004: Fig. 6)[14]. Another Postclassic burial at Copan, Burial 10, contained a complete ladle censer and a handle of another, among other materials. This burial was found in the river plain, two hundred metres south of the Acropolis (Longyear 1952: 43; Manahan 2003: 114-121, 289-297).

At Mayapan, a ladle censer was found in Burial 22, below the floor between two central benches in the main room of Structure Q 169, described as a dwelling. The censer was classified under the Navula Unslipped type, which has been assigned to the Hocaba Complex (Pollock *et al*. 1962: 196, 228-229, Fig. 4a, 1; R.E. Smith 1971: Fig. 62g) and could represent a Terminal Classic/Postclassic date (Milbrath and Peraza 2003)[15]. Burial 42, also at Mayapan, was located in a ceremonial group below plaza floors in a circular cist in a square platform identified as Q-59a. Among other materials, the burial contained eight ladle censers (R.E. Smith 1971: Figs. 33a, e, CR14, Fig. 10t)[16]. The ceramics in the context were assigned to the Hocaba ceramic complex (R.E. Smith 1971: 114) possibly representing a Terminal Classic/Early Postclassic date (Milbrath and Peraza 2003). Another ladle censer was found in Burial 5, Structure K-52a, also described as a dwelling. The censers were classified under the Panabchen Red Type assigned to the Tases complex (A.L. Smith 1962: 233-234; R.E. Smith 1971: Fig. 37h) possibly representing a Late Postclassic date (Milbrath and Peraza 2003)[17].

At Guaytan, a site which extended along both sides of the Río Lato to the Río Motagua in the Mopan Valley, a ladle censer was found in Tomb III, Structure 24 in a context assigned to the Magdalena phase. The Magdalena phase was described by Smith and Kidder (1943: 135) as including materials which were similar to those of Tepeu, and 'seemingly somewhat more recent than Tepeu, the Terminal phase of Uaxactun, as it carries plumbate pottery and is associated with copper'. Structure 24 was part of an irregular group of structures built on the terraces overlooking the valley. It consisted of a rectangular basal platform with a building platform but no evidence of a superstructure. Another platform projected from its south side. The remains of a stairway leading to the top of Structure 24 were found on the southern platform. The tomb was a multiple burial which contained an assemblage of twenty-six pottery vessels including a ladle censer, a spiked pedestal-based censer, and two spiked and flared incense burners (Smith and Kidder 1943: 144, Fig. 41b).

---

[13] Other vessels found in the burial were 3 jars (Encanto Striated: Yokat Variety), 1 bowl (Teabo Red: Teabo Variety, 2 jars (Traino Brown: Traino Variety)), 1 basin, (Traino Brown: Lodo Variety), 9 bowls and 2 miniature vessels (Achote Black: Achote Variety), 4 bowls and vases (Muna Slate: Muna Variety), 12 bowls and vases (Ticul Thin-slate:Ticul Variety), 1 bowl (Altar Orange: Altar Variety), 3 jars (Pixtun Trickle-on-Gray: Pixtun Variety), 1 tripod grater bowl (Zanahoria Scored: Zanahoria Variety), and three vases ((Cedro Gadrooned: Cedro Cariety), (Imitation Pabellon Molded-Carved), and (Torro Gouged-Incised: Torro Variety)) (Ball 1977: 149).

[14] The assemblage included two tripod Las Vegas Polychrome bowls, a Las Vegas Polychrome effigy vessel, a Tohil Plumbate gadroomed jar, two unidentified incised and gadrooned jars, and the fragment of a utilitarian Ejar-type Kan Unslipped [vessel?] (Manaham 2004: Fig. 6).

[15] The dates suggested here and below for the materials assigned to the Hocaba and Tases Complexes at Mayapan are based on recent interpretations proposed by Milbrath and Peraza (2003) and Andrews *et al*. (2003). Mayapan has been traditionally considered a Late Postclassic city (A.D. 1200-1400) mainly constructed after the fall of Chichen Itza during the Early Postclassic period. A redating of Chichen Itza materials suggests that the city was a Late Classic Maya capital whose demise would have marked the end of the Classic period (Andrews *et al*. 2003). Recent studies on Mayapan's ceramic and architectural chronology also suggest that Mayapan overlapped with the decline of Chichen Itza something which may have occurred around A.D. 1050/1100. Based on these interpretations, the Hocaba Complex could be assigned to the Terminal Classic/Postclassic period, while the later Tases Complex from Mayapan could be assigned to the Late Postclassic period (Andrews *et al*. 2003; Milbrath and Peraza 2003). The dates suggested here for the materials assigned to the Hocaba and Tases Complexes are based on recent interpretations proposed by Milbrath and Peraza (2003) and Andrews *et al*. (2003).

[16] The other reported materials are two Mayapan red basal-break tripods, burned copal, charcoal, an obsidian flake-blade, two limestone manos, fragments of stucco, a jade bead, and sherds (R.E. Smith 1971: 114).

[17] Other materials in the burial were: a human effigy jar, a bone spindle whorl, a pedestal-based vessel and sherds (A.L. Smith 1962: 234).

The burials which were reported to contain ladle censers discussed in this section from other sites were located in different kinds of structures including buildings supported by high, terraced platforms, a 'palace structure', and residences. Although the function of the so called 'palace structure' and other structures is unclear, the data suggests that ladle censers were used in funerary rituals in residential and non-residential buildings, areas, and by elite and non-elite people. Interestingly, in addition to ladle censers, several burials also contained pedestal-based censers, suggesting a possible association of these two vessels in the burning of incense.

7.1.4.2. Ladle censers in residential structures (not in burial contexts)

An example of data that may support the use of ladle censers in residences is a ladle censer found during the exploration of Structures 1 and 2 in Group 10 of Machaquila. The Structures consist of rectangular basal platforms on which C-platforms were placed that were interpreted as characteristic of the late Terminal Classic, and common in the Maya lowlands during the Postclassic period. The censer (Figure 49) was found in primary context in the interior of platform E-1 on the floor of the structure and was interpreted as having been used in a ritual of abandonment of the Structure in which it was found (Iglesias y Ciudad 2009: 34-59).

7.1.4.3. Ladle censers on the rooms of buildings sitting on pyramidal platforms

With reference to the presence of a ladle censer (censer 568) found in the room of the vaulted building of Structure 6E-12 supported by a high, terraced platform at La Joyanca presented in Table 5, a nearly complete ladle censer (12H-31/7, 8, 10, 15) was also recovered in the rooms of the building of Tikal's North Acropolis Structure 5D-26-1st, also supported by a high, terraced platform. The original context of deposition of the vessel within Tikal's building, however, is uncertain, as is its date, since fragments of the same censer were recovered from various disturbed contexts inside the temple (W.R. Coe 1990: 297, 302).

7.1.4.4. Ladle censers in cave contexts

With reference to the presence of ladle censers recovered from the cave of Aktun Ak'Ab in the Upper Basin of the Mopan River dated to the Terminal Classic period, ladle censers have also been found in the cave of Balankanche located approximately 4 km from Chichen Itza. The censers were found in Group IV, in a small chamber at the cave in association with other materials. The materials in the chamber were suggested to belong to the Modified Florescent period which most likely represents the Terminal Classic period (E.W. Andrews 1970: Figs. 7 and 16)[18]. The information suggests that at least during the Terminal Classic, ladle censers were used in rituals in caves.

7.1.5. Conclusion

The data presented suggests that ladle censers were used in epicentral areas of sites as well as in areas at varying distances from the main public/administrative and ritual centres of archaeological sites. The recovered ladle censers in the contexts presented above were associated with both ceremonial and residential structures, and were also used in caves, and in a four-lobed enclosure placed on a plaza. It seems likely that ladle censers were used in some cities of the central Maya lowlands from the Late Classic period, as is suggested by the censer from Burial PTV-2 from Structure 5D-5 (Temple V) in Tikal and other contexts less securely dated. If this was the case, the use of ladle censers would have continued during the Terminal Classic and the Early and Late Postclassic periods. The use of ladle censers continued at least in some sites of the Maya lowlands, such as Lamanai, to the conquest and at other places until Modern times.

The information presented above also suggests that ladle censers were used in funerary rituals during the Late Classic, Terminal Classic and Postclassic periods in sites of the Maya lowlands. Evidence exists of the deposition of ladle censers in burials in both ceremonial and residential structures located in the main public/administrative and ritual centres of archaeological sites as well as at various distances from them. The use of ladle censers in residential structures may not have been restricted to funerary rituals as suggested by the ladle censer found in Mound 24 in Altar de Sacrificios dated to the Late Boca phase (A.D. 830-909) or Terminal Classic and the ladle censer recovered in the explorations of Structures 1 and 2 in Group 10 in Machaquila dated to the Terminal Classic period. In reference to the use of these vessels in Central Mexico during the XVI century, Fray Bernardino de Sahagún ([1590] 1992: 49) suggested the use of the vessels in rituals conducted in the patios of houses (Section 9.3.1). If this was the case, similar practices may have existed in the Maya area.

7.2. HOLLOW CYLINDRICAL CENSER STANDS WITH FLANGES AND A CENTRAL MODELLED EFFIGY REPRESENTATION

7.2.1. General description and background

Hollow and tubular cylindrical censer stands with a central modelled effigy representation constituted the bases of composite censers on top of which vessels were placed for burning incense (Section 9.3.2). This category subsumes several subcategories of censer stands. In the Maya lowlands, Preclassic and Early Classic specimens have one effigy mask which commonly has a characteristic loop nose or snout (Figures 50 and 51). As will be noted, these stands are somewhat different from-Late Classic and Terminal Classic-period stands which may have one or more than one face effigy mask in the form of a deity or a human portrait which may or may not have supernatural attributes[19]. Another sub-category consists of hollow cylindrical censer stands with flanges and a central modelled full standing figure representation. Such is the case, from my sample of materials, of a censer from La Joyanca dated to the Terminal Classic period (Abril – Tuspan? Complexes) (Figure 31a). Another sub-category consists of hollow cylindrical censer stands with flanges and a central modelled seated figure representation (Figure 55).

---

[18] Among the materials found in association with the ladle censers found in Group IV were a variety of Chichen slate vessels, large 'tlaloc' hourglass vessels, hourglass censers with studded decoration, carved stone censers, miniature *metates* and *manos* and miniature pottery vessels. A miniature 'tlaloc' jar was also reported from the same context (E.W. Andrews 1970: Figs. 7 and 47b).

[19] However, a semi-complete presumably hollow flanged cylinder with a central modelled effigy representation from Altar de Sacrificios more similar to Late Classic and Terminal Classic specimens, was assigned to the Tzakol sphere. The cylinder consists of a semi-complete specimen

Hollow and tubular cylindrical censer stands with flanges and a central modelled effigy representation have been reported from the Preclassic through the Terminal Classic period in the Maya lowlands. At Cerros, hollow effigy cylindrical supports with flanges are reported from as early as the Terminal Preclassic period during the Tulix phase (Walker 1998: 86, Fig. 8.3). The use of tubular cylindrical supports with flanges and a central modelled effigy representation continues during the Early Classic period as evidenced by the censer stands from Uaxactun excavated in Structure E-II (Laporte 2005, personal communication) (Figure 51a)[20] and Structure E-VII (Ricketson 1937: 282, Plate 85) (Figure 51b)[21]. Other Early Classic examples of flanged censer stands with a modelled effigy representation were excavated at Santa Rita Corozal (D.Z. Chase 1988: 93). A complete specimen (A-325, Figure 51c) also assigned to the Early Classic period was excavated at Sacul by the Proyecto Nacional Tikal and the Proyecto Atlas Arqueológico de Guatemala[22] (Laporte and Mejía 2006b: 122-123, Fig. 12).

As previously mentioned, supports assigned to the Late Classic and Terminal Classic periods may have one or more than one effigy arranged in a stacking form, the central effigy being the most important. A distinction can be made between cylinders with a central deity-like representation with supernatural attributes commonly depicted with large and sometimes almost squared or rounded eyes[23] (Figure 52a, b) and cylinders with modelled central representations which consist of human portraits without supernatural attributes (Cuevas 2004) (Figure 52c). Seemingly more atypical in the censer supports, but common in other forms of Classic Maya art, is a central representation of a human portrait with supernatural attributes such as the cruller usually associated with the Jaguar God of the Underworld. A censer stand from Palenque has the central mask of a human portrait with complete human facial traits and a cruller generally identified with the Jaguar God of the Underworld (Figure 54). The existence of this specimen is not surprising since similar representations of human figures with similar supernatural attributes exist in other forms of Maya art, however, this is the only stand the author has seen with this kind of representation. The presence of these stands does not seem to be common, although their identification may be affected by the fact that appliqué elements commonly attached to the effigy masks fall off and are lost.

Several examples of hollow cylindrical supports with flanges and a central deity representation were present in the sample of materials analyzed in this project, some of which will be referred to below. Examples of hollow cylindrical supports with modelled human portraits are mainly known from the site of Palenque[24]. Although not well represented in my sample, at least one complete and another incomplete specimen are present in the collection of censer materials of the Proyecto Atlas Arqueológico de Guatemala (A314 and PSPI 27A, Figures 53a, b) both reported to have been recovered from the site of Limones. Unfortunately, the exact provenience of the two cylinders is not known as they were acquired as donations to the project (Laporte and Mejía 2006a: 278, 281-282).

7.2.1.1. Hollow cylindrical censer stands with flanges and the Jaguar/Sun representation[25]

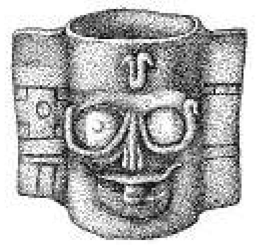


Figure 39 Censer from offering PTV-2, Proyecto Templo V (drawing: Jaime Borowics)

(87-6) classified as Miseria Apliqué: Cuh Variety assigned to the Ayn or Salinas Complex (Adams 1971: 53-54, Figs. 29i, 95c, d, Charts 4 and 5). I was not able to obtain information about the context of this cylinder.

[20] The censer stands were excavated by the Proyecto Nacional Tikal and found in the Escondite 79, located in the substructure of Structure E-II, the East Platform of Group E in Uaxactun (Operation (UX) 12, Suboperation and lot 35-4). The *escondite* consisted of two hollow and flanged effigy cylinder stands, a spiked censer stand, and five *cuencos* o *platos* classified as Aguila Naranja: Aguila (Juan Pedro Laporte, personal communication 2005).

[21] The stands were found inside the platform projecting from the south side of Structure E-VII secondary, a pyramidal structure with stairways in its sides flanked by stucco masks located on the west side of the Group E Plaza at Uaxactun. Evidence that the structure had supported a building was not found. The cylindrical stands were found in Cist 13 within the platform. The contents reported in the cist consisted of: three effigy cylindrical stands, four flat-bottomed cylindric bowls, eight redware dihes with flaring sides, and one red-ware vase with constricted neck. Among the contents were also four eccentric flints, one flint point, one obsidian blade, one unassociated pot lid, and 77 flint chips (Ricketson 1937: 95).

[22] The censer stand was excavated in the north structure of the East Group at the site. The Structure is similar to Eastern Platforms located in *Complejos de Ritual Público* (E-Groups). The context was named *Escondite* 1, which consisted of a concentration of a large number of vessels, 229 of which were recovered. The escondite consisted of plates, many of which were piled, and various incense burners. In the bottom and the northern section of the deposit four complete incense burners with inverted handles in the interior of the vessel were found. The censer stand (A-325) was located in the centre and it is reported to have had two or three fragmented vessels on top. An anthropomorphic figurine was found in association with the censer materials (Laporte and Torres 1993).

[23] Central deity representations with supernatural attributes in censer supports have commonly been identified with the Jaguar God of the Underworld or GIII (Cuevas 2004; Goldstein 1977: 412-415; Rands and Rands 1959: 230) (Figure 52a) and GI (Cuevas 2004; Hellmuth 1987: 349) (Figure 52b) although other deities may also be represented.

[24] Nine nearly complete examples of hollow, flanged, cylindrical supports with modelled human faces without supernatural attributes as a central mask from Palenque are reported by Martha Cuevas (2004). The cylinders were dated to the Cascadas (A.D. 500-600) and Murciélagos (A.D. 700-770) Complexes on the basis of a seriation of hollow flanged cylinder stands conducted by the author. A hollow, flanged, cylinder with a human portrait as a central mask, similar to the Palenque specimens was also found in the Zopo Cave (Blom and La Farge 1992: Fig. 124).

[25] The term Jaguar/Sun used to identify the diety/s represented in these censers is preliminary. Representations of the central masks in these kind of censer stands have commonly been identified as the Jaguar God of the Underworld or GIII (Cuevas 2004; Goldstein 1977: 412-415; Rands and Rands 1959: 230) (Figure 52a) and GI (Cuevas 2004) (Figure 52b).

Table 6 Distribution of hollow cylindrical stands with flanges and what is likely a Jaguar/Sun representation

Catalogue ID	Project	Site	Context ID	Context Information	Assigned Period	Fragmentation	Fig. No
135A/44; 618/19	Tikal Project	Uolantun	135A/44, 19	Structure SE-486. Lot 44 (PD. 193), large deposit of incensarios and pots, hearth, etc. on the floor of the 1st room of the building. Fragments also from lot 19 (PD.191) consisting of a surface collection located in the east side of the pyramid at approx. 20 m from its base	Terminal Classic (Eznab Complex)	Incomplete	24d
135A-608/44; 135A-587/67	Tikal Project	Uolantun	135A/44; 135A/67	Structure SE-486. Lot 44 (PD.193), large deposit of incensarios and pots, hearth, etc. on the floor of the 1st room of the building. Fragments of the same cylinder also from lot 67 (PD.191), located in the back of the temple. PD.191 materials are presumed to have fallen down from the back room of the temple building.	Terminal Classic (Eznab Complex)	Fragment	25d
12U-84a/16 and 12U-84b/16	Tikal Project	Tikal	12U/16	North Acropolis, Structure 5D-32-1st, excavation through unit 1 (bench)	early Late Classic (Time Span 6)	Complete and semi-complete	12c and 13a
N/A	Proyecto Templo V	Tikal	PTV-2	East of the South Acropolis, Structure 5D-5, offering of incensarios in the 9th *muro de encajuelado* of the substructure	early Late Classic	Complete	11a
3A-88/6, 9	Tikal Project	Tikal	3A-88/6, 9	Group 7F-1, interior with some surface admixture and hearting of a small platform (construction A) between the steps of Mound 7F-30 (a small temple to the East) and Stela 23. PD. 100. The platform is later than and partly overlaps Mound 7F-30	Late Classic or Terminal Classic	Incomplete	33a
614924	Proyecto Arqueológico Regional Petexbatun	Dos Pilas	DP15J-2-1-1; DP15J-8-2; DP15J-6-1; DP15J-2-2	Structure K4-2 in Group K4-1, 200 m northeast of the Main Plaza. Structure located in the east side of the Group's Plaza. The censers were found on the platform of the structure, possibly on the floor, near Panel 19.	Late Classic	Incomplete	6a, b
PNT 020	Proyecto Nacional Tikal	Tikal	6C-50-2	Group 6C-XV, 300 m south of Mundo Perdido. Structure 6C-50-2, is located in the east side of the group. The stand was found in a frontal niche that divides the stairs of the structure in two	Late Classic (Imix Complex)	Complete	8
MN8858	Proyecto Altar de Sacrificios	Altar de Sacrificios	43 (X)	Structure A-I, surface to an average of 20 cm below	Late Classic	Semi-complete	56a
PSPI 320	Proyecto Atlas Arqueológico de Guatemala	Calzada Mopan	37-1505-2	Grupo Carmen X, Structure 3 (joint to the East Structure of the Group), northwest corner	Terminal Classic	Complete	56b

7.2.1.1.1. Description and background

As previously described, hollow cylindrical stands with flanges and the representation of the Jaguar/Sun are subsumed here under the category of 'Hollow Cylindrical Censer Stands with Flanges and a Central Modelled Effigy Representation'.

7.2.1.1.2. Distribution of hollow cylindrical censer stands with flanges and the Jaguar/Sun representation in my sample

The effigies of the censer stands presented below have attributes commonly associated with GIII identified as the Jaguar/Sun also known as the Jaguar God of the Underworld, 'k'inich Ajaw' and 'Señor del Sol', and possibly also with GI whose identification as a deity is less clear but who may represent an aspect of the solar deity. These deities were identified in the censers from Palenque (Cuevas 2004). However, as previously noted, other deities may also be represented.

7.2.1.1.3. Structure/context summary

The hollow flanged cylinders illustrated in Table 6 were recovered in association with structures composed of high, terraced platforms which supported a building on top, commonly identified as temples; they were also associated with eastern structures within plaza groups, some of which are interpreted as shrines. The association of the cylinders with these kinds of structures suggests their relation with religious rituals.

7.2.1.1.3.1. Cylinders in pyramidal structures

The cylinders recovered in association with structures with high, terraced platforms were intentionally deposited in the following contexts: on the floor of the outer room of the building of Structure SE-486 in Uolantun, beneath the bench of Room 3 of the building of Structure 5D-32-1st in Tikal, and in the core of the substructure of Structure 5D-5 (Temple V) in Tikal. The cylinder excavated in the smaller temple Mound 7F-30 in Tikal was found in the core of a platform, between the steps of the structure and a stela. The censer stand MN8858 from Altar de Sacrificios was recovered from a surface context in Structure A-I, also a high, terraced platform supporting a building.

Of the structures mentioned above, Structures 5D-5 and 5D-32-1st in Tikal as well as A-I in Altar de Sacrificios, are over 10 meters high and support a vaulted building composed of one to three tandem rooms. The three structures are located in epicentral areas of the sites (W.R. Coe 1990: 527-554; Muñoz 1997: 293-307; A.L. Smith 1972: 12-36). Structure SE-486 in Uolantun, a minor centre located 5.5 miles of Tikal is also a pyramidal structure of the same kind located south east at the site (Puleston 1983: Fig. 12). Structure 7F-30 is a smaller pyramidal structure to the east in Group 7F-1, situated approximately one kilometre southeast of Tikal's epicentre. It consists of a platform approximately 6 meters high with a stair on its west side and a vaulted masonry building on top (W.R. Coe and Broman 1958: 23-60). The hollow flanged cylinders therefore appear to have been recovered in association with pyramidal structures in main ceremonial and administrative areas of large sites as well as in smaller sites such as Uolantun or architectural groups such as Group 7F-1.

7.2.1.1.3.2. Cylinders in eastern structures

The remaining cylinders presented in Table 6 were recovered from eastern structures in non-epicentral areas at the sites of Tikal, Calzada Mopan and Dos Pilas.

Structure 6C-50-2 is located in Group 6C-XV, 300 meters south of Mundo Perdido in Tikal. The structure was defined as a '*templete*' or shrine to the east of the group, which was considered as a *Patron de Plaza 2* group[26]. The group consists of three structures on a basal platform of which 6C-50-2 is the most important; the two others are low platforms located to the south and north. Structure 6C-50-2 consisted of a masonry vaulted building with two longitudinal rooms and a frontal stair on its platform (Laporte and Iglesias 1999: 34, 36-38). The cylinder was found in a frontal niche that divides the stairs in two (Juan Pedro Laporte, personal communication 2006).

Structure K-4-2 is located in Group K-4-1 at Dos Pilas, a residential group two hundred metres northeast of the Main Plaza of the site. The group consisted of modest constructions in low terrain (Palka 1990: 146-165). Structure K-4-2 can be described as a long building which lies on a long platform. The platform had an extension to the front and west of the building. The excavations of the structure suggested a perishable roof for the building. The cylinder possibly lay on the floor (Palka 1990: 146-165). I was not able to obtain specific information about Structure 3 in Carmen X group. Nevertheless, both structure K-4-2 and Structure 3 located in the Carmen X Group of Calzada Mopan constitute structures located to the east in residential groups located away from main ceremonial and administrative centres.

The location of the structures described above suggests the use of hollow flanged cylindrical stands with the probable representation of the Jaguar/Sun in both pyramidal structures and eastern structures within groups (possible shrines) which could indicate an association of the cylinders with buildings dedicated to ritual uses. However, although Structure 6C-50-2 appears to have been religious and ceremonial, the function of Structure K4-2 is not clear, although given the presence of a hieroglyphic panel on the floor of the structure, it housed important elite activities. The function of Structure 3 is also not clear from the information available. The structures appear to have housed rituals, Structures 6C-50-2 and K4-2 most likely group or community rituals run by specialists, since residential buildings do not appear involved. The data also suggest that the cylinders would have been used at the main ceremonial/administrative centres of sites as well as at some distances from them during the Late Classic and Terminal Classic periods.

7.2.1.1.4. Evidence from other sites

7.2.1.1.4.1. Cylinders in pyramidal structures

Hollow flanged cylindrical stands with the modelled representation of the Jaguar/Sun are also reported to have been recovered from other sites in the Maya lowlands in association with pyramidal structures. Such is the case of the cylinder found in Structure 30-1st at Las Ruinas de Arenal—a 'pyramidal' structure with a vaulted building with two tandem rooms at its summit located in Group B at the site. The flanged cylinder was found on the floor of the rear room of the building in association with seven other pottery vessels among which was a spiked pedestal-based censer. The context was interpreted as a Terminal Classic 'termination offering' (Taschek and Ball 1999: 229, Figs. 13 and 14)[27].

---

[26] The *Patron de Plaza 2* is a plaza plan which was defined at Tikal as consisting of residential groups that include a relatively square and tall structure on the east and relatively low, rectangular structures in other positions (Becker 1999). In these type of plazas the eastern buildings are interpreted as having the function of a ritual shrine or temple (*oratorio*) for the resident family members in the group while the other non-square and non-east buildings are seen as structures that would have functioned for other domestic purposes (cf. Becker 2001).

Another example of the association of these cylinders with pyramidal structures are the censer stands found in the Group of the Cross at Palenque. In this case, hollow flanged cylinders with a main representation identified as GI and GIII dated to the Cascadas (A.D. 500-600), Otolum (A.D. 600-700), Murciélagos (A.D. 700-770) and Balunté (A.D. 770-850) Complexes were found in the Temple of the Cross, the Temple of the Foliated Cross, the Temple of the Sun, and Temple XIV, all structures supporting a vaulted building with two tandem rooms, the rear one having a sanctuary with two small rooms on its sides. Almost all the censer stands recovered from these structures are reported to have been found in the cores of the terraced platforms of the structures and appear to have been purposely buried, mostly aligned in different groups following the direction of the terraces. The cylinders were located at regular intervals, and were standing in a vertical position in most cases with a specific orientation. Many of them were found in situ and in several cases they were associated with vessels containing burned resin. In one exceptional case, a cylinder is reported to have been found on the stucco floor of the platform terrace (Cuevas 2004). The latter may suggest the use of these cylinders on or along the terraces that formed the substructures of temples. The cylinders were also found in primary context within the core of the substructures of the temples (not associated with the terraced platforms), occasionally on a flat surface made on the bedrock where the censers were deposited and then covered with core material in the form of a *talud* as in the Temple of the Cross. Another type of context where the cylinders were reported to have been found is outside Temple XV under the floor level of the plaza (Cuevas 2004: 66). The cylinders were also found in other areas of Palenque on the floors of temples (Cuevas 2004:61).

The in situ context of cylinder PNT 020 found in a frontal niche in the stairs of the eastern Structure 6C-50-2 in a group located south of Mundo Perdido in Tikal suggests another context in which cylinders may have been used in association with pyramidal structures. In fact, Guillermo Bernal has suggested that the niches in the *alfarda* of the southern façade of the Temple of the Cross at Palenque could have served to fit flanged cylinder stands on the basis of the size and form of the niches and the Palenque flanged cylinders (Guillermo Bernal, as cited in Cuevas 2004: 111).

7.2.1.1.4.2. Cylinders in cave contexts

Hollow, flanged cylindrical stands with the Jaguar/Sun representation are also reported to have been found in caves. Such is the case of the censer stands from the Zopo Cave (Blom and La Farge 1992: 162-166, Figs. 122-123).

7.2.1.1.5. Conclusion

As was previously noted, the stands appear both in the main centres of archaeological sites and in groups located at a distance from the main ceremonial centres. The information presented above suggests an association of hollow flanged cylinders with large squared or rounded eyes and other supernatural attributes, probably identified as the Jaguar/Sun, with pyramidal structures, eastern structures and caves, venues all associated with ritual. Caves are known to have been spiritual places for the Maya, and it is probable that all of the structures presented here were sites of community ritual activity, although the function of two of the three eastern structures is not clear and these eastern structures might not have been exclusively ceremonial. They may have also been residential.

7.3. TUBULAR CYLINDRICAL STANDS (OR CONTAINERS?) WITH FLANGES, A SOLID BASE, AND A CENTRAL MODELLED EFFIGY REPRESENTATION

7.3.1. General description and background

In contrast to the hollow cylindrical stands with flanges and a central effigy representation of a deity or a human portrait with or without supernatural attributes, the cylinders discussed have a base which at least in some cases has a small round perforation in its centre. In this study, cylinders with and without a base are presented separately, since their function may have been different. Although I did not observe burning traces in the inner surfaces of the vessels recorded in my sample, I include this subcategory owing to their similarity to the other cylinders with a central modelled representation of the Jaguar/Sun; their use may have also been associated with the burning of incense. Also, as in the case with the specimens without a base, the cylinders with flanges and a solid base may have a central deity representation with large and squared or circular eyes and a cruller, or a more anthropomorphic representation with or without a cruller with smaller and more human like eyes. Specimens that would also fall into this sub-category were excavated at the site of Hatzcap Ceel, in the southern Cayo District of Belize (Figure 57)[28].

7.3.1.1. Tubular Cylindrical Stands (or containers?) with Flanges, a Solid Base, and the Jaguar/Sun Representation

7.3.1.1.1. Description and background

The effigy face represented in these vessels can also be interpreted as the Jaguar/Sun.

---

[27] The seven other pottery vessels consisted of a spiked pedestal-based censer, an incised redware tripod bowl (Cameron Incised), a T-rim blackware basin (Mt. Maloney Black), and four jars: a small unslipped jar (Cayo Unslipped), a small blackware jar (Mt. Maloney Black), a redware jar (Tinaja Red), and a modelled-spout redware jar (San Julio Modelled). Each of the four jars are reported to have been used as incense-burning containers given that 'a charred gummy organic residue still adhered to the inner sides of each'. No burning evidence is reported for the other vessels (Taschek and Ball 1999: 229).

[28] The specimens were found in Structure M, Group II, a group consisting of five mounds situated on a hilltop about 120 metres southeast of the Main Group of the site built around a ceremonial plaza. Mound M, was a pyramidal eastern structure reported to be approximately 6 metres high. Due to the collapse of its sides no evidence was found suggesting whether it was terraced or it had a stairway. The structure is reported to have had a room at its summit. The plan of the room and the debris of the walls found in it suggested that the room had a corbelled arch. Fragments of three incense burners were found on the floor in the doorway of the room. A spiked bowl was found together with the cylinders. The material was tentatively dated to the Holmul V period based on a similar type of cylinder found in a burial at the site dated to this period (J.E.S. Thompson 1931: 248-257, Plate XXVII).

Table 7 Distribution of hollow cylindrical stands with flanges, a solid base, and the Jaguar/Sun representation

Catalogue ID	Project	Site	Context ID	Context Information	Assigned Period	Fragmentation	Fig. No
Am1938, 1021.312	Gann Expeditions	N/A (in the Western District of British Honduras)	N/A	Upon a stone altar in a cave. Eleven other vessels "almost exactly similar in form" (Gann 1934: 53) were associated with the cylinder	N/A	Complete	58a

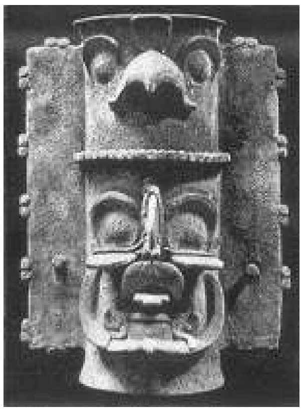


Figure 40 Censer Am938, 1021.312
(after Gann 1934: 53, Fig. 6)

7.3.1.1.2. Distribution of cylindrical stands with flanges, a solid base, and the Jaguar/Sun representation in my sample (Table 7)

7.3.1.1.3. Structure/context summary

Censer Am1938, 1021.312 (Figure 58a) was recovered by Thomas Gann and it is reported to have been found together with eleven other censers, 'almost exactly similar in form, upon a stone altar, in a cave in the Western District of British Honduras' (Gann 1934: 53, Fig. 6).

7.3.1.1.4. Evidence from other sites

In reference to censer Am1938.1021.312 reported by Gann (1934: 53) from a cave in British Honduras, Seller has also reported the presence of tubular cylindrical stands with flanges, a solid perforated base, and what is probably a Jaguar/Sun representation at the cave of Quen Santo in Chacula, Department of Huehuetenango, Guatemala (Seler 1901).

A specimen that would fall under this category (Am1997, Q855, Figure 58b) was also recovered by the British Museum in one of its expeditions to British Honduras (perhaps in the 1928 expedition [Stewart Watson, personal communication 2007]). Its provenience is not clear. A similar vessel with a base, flanges and the representation of the night sun with a cruller dated to the Late Classic period was found in front of Caracol's Structure B19-1st, one of the three structures built at the summit of Caana, the highest pyramidal structure of the site in Plaza B. The censer was found together with other unslipped vessels and broken chert pieces in the pit of Altar 16 located in the central stair bulk of the structure (A.F. Chase and D.Z. Chase 1987: 24, Fig. 19) (Figure 59a). The authors also report a similar censer from a residential group at Caracol, found in 'latest-use ritual deposits' (A.F. Chase and D.F. Chase 2004: 352, Fig. 16.5a) (Figure 59b).

7.3.1.1.5. Conclusion

The contexts presented above suggest the use of cylinders with flanges, a solid base and the representation of the Jaguar/Sun in association with pyramidal structures as well as caves. The cylinders would have been used in both epicentral areas of sites and residential groups at some distance from the sites' epicentres during at least the Late Classic period. The stands may have been used in rituals for community welfare activity and may have not been part of residential activities.

7.4. VASES WITH FACE EFFIGY (WITH BURNED INNER SURFACES)

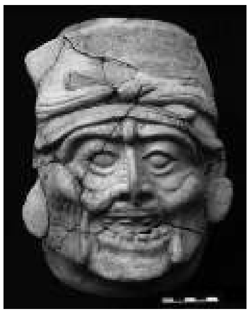


Figure 41 Vase 310050, Proyecto Aguateca

7.4.1. Description and background

The vessels in this category consist of vases with a modelled representation of a human or jaguar face. Although many examples of vases with a human face representation are known in the archaeological record not to have burning traces inside, some of the specimens presented in this category do, and they are suggested here as possible incense burners. Among the materials of the Proyecto Atlas Arqueológico de Guatemala there is also a vase with a human face which is burned on its inner surface and which is dated to the Early Classic period (PSPI 432, Figure 60a)[29]. The three vases presented here have faces with a convex forehead. Two of the vessels were dated to the Late Classic period (Nacimiento phase) (Ponciano

---

[29] Vessel PSPI 432 is one of five vases with a human face representation excavated by the Proyecto Atlas Arqueológico de Guatemala and dated to the Early Classic period. The vessel was excavated at the site of Ix Ek' in Plaza B at the central area of the site in Problematical Deposit 5 in what was part of the Early Classic occupation of the plaza. The deposit consisted of a large concentration of fragmented materials among which were two other vases with a human face representation (Juan Pedro Laporte, personal communication 2006).

Table 8 Distribution of vases with face effigies possibly used as censers

Catalogue ID	Project	Site	Context ID	Context Information	Assigned Period	Fragmen-tation	Fig. No
310050	Proyecto Aguateca	Aguateca	21A-16 and 47	Structure M7-34, approximately 200 metres northeast of the Main Plaza. Vase found on the patio floor in front of the building	Late Classic (Nacimiento phase)	Complete	2a
310385	Proyecto Aguateca	Aguateca	21A-20, 21, 23, 28, 33 and 51	Structure M-7-34, approximately 200 metres northeast of the Main Plaza. Vase found on the patio floor in front of the building	Late Classic (Nacimiento phase)	Semi-complete	2b
77-1	Proyecto Altar de Sacrificios	Altar de Sacrificios	77 (A)4	Mound 14, approximately 370 miles west of the North Plaza	Late Classic/ Terminal Classic (Boca phase)	Incomplete	60b

et al. 1998; Valdés *et al.* 2000) and the third vessel was dated to the Boca phase (A.D. 771-909) (Adams 1971: Figs. 102a-b, Table 26; A.L. Smith 1972: 171-173) or Late Classic/Terminal Classic period.

7.4.2. Distribution of vases with face effigies with burned inner surfaces in my sample (Table 8)

7.4.3. Structure/context summary

Vessels 310050 and 310385 were recovered from the patio floor in front of Structure M7-34, located in the epicentre of Aguateca, 200 metres northeast of the site's Main Plaza. Structure M7-34 consists of a low platform composed of three rooms aligned on a north-south axis. Each room was divided into a front and a rear part by walls running parallel to the axis of the building, and it had a doorway and a bench to the back of the wall (Ponciano *et al.* 1998; Valdés *et al.* 2000).

The vase 77-1 (Figure 60b) with the representation of a jaguar face was excavated in Mound 14, located in a settlement area to the west of the North Plaza at Altar de Sacrificios. The mound is described as a 'roughly square mound with a small mound attached to its south side; a low platform on its northeast corner rises about 3.8 m above the slight natural eminence on which it is located' (A.L. Smith 1972: 154). The vessel was recovered from a mixed context and was assigned to the *Boca* phase (Adams 1971: Figs. 102a-b, Table 26; A.L. Smith 1972: 171-173) which would represent the Late Classic/Terminal Classic period.

7.4.4. Evidence from other sites

In reference to the vase with a jaguar face mentioned above, a similar vase with a jaguar face representation from Tabasco, Mexico (Figure 60c) is held by the Museo Nacional de Antropología in Mexico City (Martínez 2004: 259).

7.4.5. Conclusion

The vessels presented here, dated to the Late Classic and Late Classic/Terminal Classic periods, were recovered from epicentral areas of sites in structures which may be residential. If used in residential structures, the vessels may have been part of family or lineage rituals. Vessel PSPI 432 from the Proyecto Atlas Arqueológico de Guatemala suggests that vases with face effigies may have been used as receptacles to burn incense and/or other materials from the Early Classic period.

7.5. PEDESTAL-BASED CENSERS

7.5.1. General description and background

The category of pedestal-based vessels is broad and encompasses many different kinds of vessels. Aspects related to the meaning and use of the different kinds may therefore have differed. Pedestal-based censers can be decorated or plain. Among the decorated vessels, specimens decorated with spikes are very common and they may also contain an effigy representation. Two kinds of pedestal-based censers were selected for the distributional analysis based on the criteria described at the beginning of this chapter: flanged zoomorphic pedestal-based containers and a spiked pedestal-based vessel.

7.5.1.1. Flanged zoomorphic pedestal-based censers

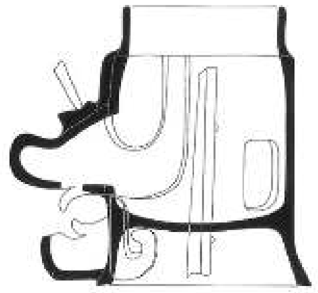


Figure 42 Censer 12U-82b/16, Tikal Project (drawing: courtesy of the University of Pennsylvania Museum)

7.5.1.1.1. Description and background

These censers are flanged pedestal-based containers with an effigy representation in the form of a zoomorphic mask

Table 9 Distribution of flanged zoomorphic pedestal-based containers

Catalogue ID	Project	Site	Context ID	Context Information	Assigned Period	Fragmentation	Fig. No
12U-82b/16	Tikal Project	Tikal	12U/16	North Acropolis, Structure 5D-32-1st, deposit of incense burners found in excavation through Unit 1 (bench)	early Late Classic (Time Span 6)	Complete	12b
87-24	Proyecto Altar de Sacrificios	Altar de Sacrificios	90 (A)3	Possible residential structure (Mound 24), approximately 600 metres west of the North Plaza	Likely Terminal Classic (Late Boca phase A.D. 830-909)	Complete	17

with scalloped eyebrows and a projecting snout. They were classified by Ferree (1972: 116-118) under the Type Flanged Cylinder on Pedestal Support and described as having ‘very large eyes, barely convex, with a distinctive U-shaped border; a hollow, projecting snout with a noseplug on top; and sometimes a pocket jaw on the wall below the snout, with a mouth scroll on either side’.

7.5.1.1.2. Distribution of flanged zoomorphic pedestal-based censers in my sample (Table 9)

7.5.1.1.3. Structure/context summary

The contexts of these vessels, associated with a pyramidal structure in the North Acropolis of Tikal, and with a small mound in a residential area of Altar de Sacrificios suggest the use of these vessels in public ceremonial as well as residential areas, and possibly, both ceremonial and residential structures.

Censer 12U-82/16 was dated to the early Late Classic period (W.R. Coe 1990: 573-574) and censer 87-24 was assigned to the Late Boca phase (A.D. 830-909) during the Terminal Classic period (Adams 1971: Figs. 102a-b; A.L. Smith 1972: 171-173).

Censer 12U-82/16, found in a pyramidal structure had a seated-effigy cover while censer 87-24 found in what appears to be a residential structure had a more modest lid with a chimney.

7.5.1.1.4. Evidence from other sties

A flanged zoomorphic pedestal-based censer dated to the Late Classic period almost identical to specimen 87-24 was recovered by the Proyecto Arqueológico Calakmul (Boucher and Palomo 2000: Fig. 11) (Figure 61) in the surface of Structure IVB, located in the Main Plaza of the site to the east. Structure IVB is an eastern platform, which consists of a rectangular platform with three structures on top in front of which were found stelae and altars (Sylviane Boucher, personal communication 2006). A stone zoomorphic censer reported by Maudslay to have been found in Copan Structure 22 (Maudslay [1889-1902] 1974: Plate 12) could possibly belong to the same category of censers[30]. The structure is dated to the eighth century, and is suggested to have functioned as the royal throne room of the highest ruler at Copan, where state rituals that would have been part of Maya state religion would have been conducted (Ahlfeldt 2004; Miller 1999).

7.5.1.1.5. Conclusion

The information presented above suggests that the censers were possibly used during the Late Classic and Terminal Classic periods. Based on the structures where the censers were found which were used by royalty, the vessels would have been used in rituals associated with a Maya state religion. The recovery of a flanged zoomorphic pedestal-based censer in a mound in a settlement area of Altar de Sacrificios, suggests the possibility that this type of censer was also used in rituals conducted in residential structures by people that may not have been part of the elite.

7.5.1.2. Spiked pedestal-based censers

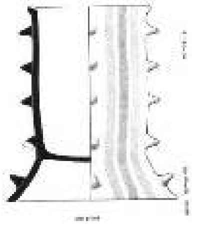


Figure 43 Censer 12U-85/16 (courtesy of the University of Pennsylvania Museum)

7.5.1.2.1. Description and background

Only one spiked pedestal-based censer (illustrated above) was selected for this analysis under the criteria previously described and was assigned to the early Late Classic period. Spiked pedestal-based censers were assigned in Altar de Sacrificios to the Boca Complex (A.D. 771-909) (Adams 1971: 53, Chart 10, 5b) or Late Classic/Terminal Classic period. Based on a sample of sixty five sherds, the vessels at Seibal, were assigned to the Bayal Complex or Terminal Classic period (Sabloff 1975: 174-178). At Uaxactun, two probable spiked pedestal-based censers with missing pedestals were considered Tepeu types (R.E. Smith 1955: 101-102, Figs. 13 m, o) which could be Late Classic or Terminal Classic. At Macanche Island, spiked-hourglass

---

[30] Taube (1998: 437) suggests that the censer from Copan is a zoomorphic *tun*, similar to the *tun* sign from doorway maw of Copan Structure 22. The author identifies the censer as representing the central stone of a three stone hearth: ‘The stones are forms of the *tzuk* head defined by Grube and Schele (1991), who interpret it as a symbol of cosmic world partitions (…) the *tzuk* head defines and ultimately represents the center, whether it is placed equidistantly in groups of four, three, or simply a single head as the *axis mundi*’. Interestingly, the zoomorphic censer from Tikal (12U-82/16) on top of which a seated- effigy cover was placed has five *cauac* symbols and a scroll in each eye.

Table 10 Distribution of spiked pedestal-based censers

Catalogue ID	Project	Site	Context ID	Context Information	Assigned Period	Fragmentation	Fig. No
12U-85/16	Tikal Project	Tikal	12U/16	Structure 5D-32-1st, North Acropolis. Excavations through Unit 1 (bench) at the centre rear of Room 3	early Late Classic (Time Span 6)	Semi-complete	13b

censers are reported to date to the Late Postclassic period as part of the Dos Lagos Complex[31]. Pedestal-based vessels with spikes only would have continued to be used during Colonial times, at least in some sites of the Maya lowlands, as evidenced by a specimen from Coxoh (Lee 1979). In Modern times, the use of spiked pedestal-based vessels as offering receptacles for flowers by Tojolabal communities in Chiapas has been reported (Deal 1982: 614-633).

7.5.1.2.2. Distribution of spiked pedestal-based censers (Table 10)

7.5.1.2.3. Structure/context summary

Censer 12U-85/16 was found together with other incense burner material beneath a bench at the centre rear of Room 3 in Structure 5D-32-1st, a pyramidal structure in the North Acropolis of Tikal. The censers were found in a pit beneath the bench. The pit is reported to have been disturbed and it was named Problematical Deposit 180. Despite the disturbance, the shattered censer materials from this context were repaired with some unfitted fragments remaining. Sherds belonging to two flanged cylinders also present in this deposit were recovered from other problematical deposits inside the structure. The context of the censers was dated to Time Span 6 (W.R. Coe 1990: 573-574) or early Late Classic period.

7.5.1.2.4. Evidence from other sites

7.5.1.2.4.1. Spiked pedestal-based censers in pyramidal structures

Spiked pedestal-based censers have been found in the rooms of the buildings supported by pyramidal platforms. Two nearly complete specimens were recovered from the temple room of Structure A-XV at Uaxactun, a context assigned to Tepeu (R.E. Smith 1955: Figs. 13m, o) or Late Classic/Terminal Classic period. Another complete spiked pedestal-based censer was found in the rear temple room of Structure 30-1st, in Group B at Las Ruinas de Arenal interpreted as part of an offering which included other pottery dated to the Terminal Classic period (Taschek and Ball 1999: 229; Fig. 14g). Smashed spiked censers, one of which is reported to be almost identical to the one at Las Ruinas de Arenal, were also found in the rear room of Structure BV C-3 at Buenavista del Cayo a in a context assigned to the Late Classic or Terminal Classic period (Joseph Ball, personal communication 2006)[32].

Also associated with a structure described as a ‘temple pyramid’ is the spiked pedestal-based censer (S-no. 3066) found as a cache (Cache 18) in Structure 1H-10 (TP 7527) located in the peripheral zone at Seibal (Willey 1990: 233). The sealed cache was located in the north corner between the stair platform and the main body of the pyramidal structure of the third and later phases. The cache was assigned to the Bayal phase (A.D. 830-930) or Terminal Classic period and the spiked censer is reported to have had ‘some carbonized bits of matter that could have been copal’ (A.L. Smith 1982: 245).

7.5.1.2.4.2. Spiked pedestal-based censers in burial contexts

Spiked pedestal-based vessels have also been found in burials. At Caracol, for instance, a lidded spiked pedestal-based censer was found in a tomb in the outlying residential Toucan Group. The censer is reported to have been part of an offertory assemblage which also included a Molino Black vessel, two Ceiba Unslipped vessels, and a flanged cylinder with the representation of the Jaguar God of the Underworld. The burial was assigned to the Late Classic period (D.Z. Chase and A.F. Chase 1994: 116).

At Guaytan, spiked pedestal-based vessels were found in Tombs II and III dated to the Magdalena phase [probably Postclassic] in Structure 24. The structure was built on the terraces overlooking the Motagua valley and was part of an irregular group of structures. It consisted of an irregular basal platform with a building platform on top, on which no traces of a building were found. Another platform projected from its south side (Smith and Kidder 1943: Figs. 40c, d).

At Lamanai, a spiked pedestal-based censer was found in a burial in the core at the top of Structure N10-7, a terraced pyramidal platform located on the east side of a plaza which has N10-9 as its south side. No traces of a chambered building on top of N10-7 were found, and the structure was much lower than N10-9, ca. 12 metres. The spiked pedestal-based censer was one of a pair—the other one contained the representation of a face which was as tall as the full height of the spiked example but so poorly fired that it was not possible to reconstruct it. Based on associated ceramics the burial was assigned to the Buk Phase or the Early Postclassic period (David Pendergast, personal communication 2007).

7.5.1.2.4.3. Spiked pedestal-based censers in cave contexts

Spiked pedestal-based vessels have also been recovered from cave contexts. An example are the numerous hourglass vessels found at Balankanche dated to the Modified Florescent period (E.W. Andrews 1970) which likely represents the Terminal Classic period. Pedestal-based vessels with a ridge below the rim, with vertical cut notches and spikes encircling the body of the vessels were also found at the Río Frío Caves C (G. Mason 1928: 43, Fig. 30) and fragments of similar specimens at Cave E where on the basis of stylistic grounds they were assigned a Tepeu 3 date (Pendergast 1970a: 46, Fig. 12g).

---

[31] Pedestal-based vessels with spikes, finger impressed and/or round appliqué adornos are different from the ones described here and are not included in this category.

[32] Joseph Ball has interpreted the presence of the censers as reference for the burial within and below the east most bench of the room (Joseph Ball, personal communication 2006).

7.5.1.2.4.4. Spiked pedestal-based censers in association with stelae

Spiked pedestal-based censers have also been recovered in association with stelae such as the lidded censer found in front of the front edge of the base of Stela 9 in Piedras Negras (W.R. Coe 1959, Fig. 60e; Satterthwaite 1946) which is almost identical to a lidded censer from Lamanai dated to the Colonial period but without spikes (based on my personal observation of an illustration of the vessel).

7.5.1.2.5. Conclusion

The spiked pedestal-based censer found in Tikal Structure 5D-32-1st beneath the bench at the centre rear of Room 3 and the pedestal-based censer from a burial at Caracol from a Late Classic date suggest that spiked pedestal-based censers were used in the Maya area during the Late Classic period. Other spiked pedestal-based censer material presented above is dated to the Late Classic or Terminal Classic period. The presence of spiked pedestal-based censers is more clear during the Terminal Classic period and the vessels continued to be used in sites during the Early and Late Postclassic periods as well as in Colonial and Modern times, although the use that has been recorded in Modern times for these vessels is not as incense burners but as flower holders (Deal 1982).

Based on the information presented above, spiked pedestal-based censers appear to have been used both in epicentral and outlying areas of archaeological sites. This is also suggested by specimens recovered from various contexts in my sample that were not included in the distributional analysis[33]. The vessels have been found in a variety of primary contexts and therefore may have been used in different kinds of rituals. Spiked pedestal-based vessels are commonly associated with pyramidal structures where they have been found beneath a bench in a context dated to the early Late Classic period (possibly as a cache), on the floors of rooms of buildings in contexts dated possibly to the Late Classic period and to the Terminal Classic period (likely as a residue of occupation), as a cache between the stair platform and the main body of pyramidal structure 1H-10 at Seibal dated to the Terminal Classic period, and as a burial dated to the Early Postclassic period. Spiked pedestal-based censers from various kinds of structures recovered from burials were found in residential as well as in main ceremonial/administrative areas of sites. At least during the Terminal Classic period, spiked pedestal-based vessels were also used in caves. The vessels would also have been used in rituals associated with stelae.

7.6. THREE-PRONGED SUPPORTS (WITH BURNING EVIDENCE IN THEIR BASES)

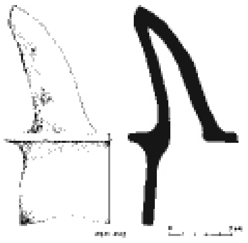


Figure 44 Censer fragment PSPI 442, Proyecto Atlas Arqueológico de Guatemala (drawing: Jorge E. Chocón)

7.6.1. Description and background

The three-pronged supports recorded in this study consist of pedestals with vertical or slightly outflaring walls with a commonly outcurved upper surface on which three rounded-top hollow or solid prongs are attached equidistantly. An undulating ridge-like feature often crosses the centre of the outcurved upper surface.

7.6.2. Distribution of three-pronged supports in my sample (Table 11)

7.6.3. Structure/context summary

The material of three-pronged supports included in this analysis, based on the criteria previously described and presented in Table 11, was recovered by the Proyecto Atlas Arqueológico de Guatemala at the site of Calzada Mopan. PSPI 297 (Figure 62a) is reported to have been found in a residential context assigned to the Terminal Classic period. The two other supports (PSPI 442 and 443, Figure 62b, c), were found in a possible secondary context that could be Terminal Classic or Postclassic. The specimens were recovered from the main structure of Group 1 at Calzada Mopan. Group 1 was located northeast of the site's central area and consisted of a pyramidal structure located in the upper section of a hill and several residential groups located on the lower hillside and plain surrounding the hill. The censer fragments were found in the circular terraced structure that was located in the upper section of the hill. The structure consisted of two terraced platforms and a third platform forming an upper patio. It was approximately 4.50 metres high and it had a central stairway. PSPI 442 and 443 were recovered from a pit (1.10 m in diameter and 6.10 m deep) found in the centre of the upper patio of the structure. The pit was constructed with rectangular blocks and had also been part of a quadrangular substructure interpreted as a possible altar found below the circular terraced structure. In the pit were abundant materials which included censer fragments, fragments of marine shell, a mosaic pyrite mirror and pottery with fish designs. The materials found in the fill of the pit were named Deposit 10 and were assigned to the Terminal Classic, although some sherds were also assigned to the Postclassic period. The pit was interpreted as a possible '*brocal*' or water pit (Mejía 2001: 116).

---

[33] Exmples are two specimens recovered by the Proyecto Atlas Arqueológico de Guatemala: PSPI 292 and PSPI 296. PSPI 292 was found in a surface context in Group 119, a residential group at Calzada Mopan. The censer was dated by Juan Pedro Laporte to the Terminal Classic or Postclassic period. PSPI 296 was found at the same site and was also dated to the Terminal Classic period.

Table 11 Distribution of three-pronged supports

Catalogue ID	Project	Site	Context ID	Context Information	Assigned Period	Fragmentation	Fig. No
PSPI 297	Proyecto Atlas Arqueológico de Guatemala	Calzada Mopan	37-795-1	Residential	Terminal Classic	Incomplete	62a
PSPI 442 and PSPI 443	Proyecto Atlas Arqueológico de Guatemala	Calzada Mopan	37-1162-4	Group 1, main structure in a hill's upper section. Deposit 10, fill of a pit in the upper platform of the structure	Terminal Classic or Postclassic	One specimen is incomplete, the other one is a fragment	62b, c

7.6.4. Evidence from other sites

At Caracol, two three-pronged supports are reported to have been recovered in a burial dated to the Terminal Classic period in a residential group in the outlying core settlement of the site (A.F. Chase and D.Z. Chase 2004: 361, Fig. 16.8). Also at Caracol, an incomplete three-pronged support was recovered in Structure B42, an eastern structure in the B42 plazuela group, a residential group located in the southern end of the C Group. The structure was interpreted as an eastern shrine building consisting of a 'squarish' construction. The pronged support was recovered from within the humus and collapse overlying the front stairway area of the structure in association with a number of reconstructable Terminal Classic materials, which included two Sahcaba Modelled-Carved vessels and a Cohune Composite vessel. Based on stratigraphy and ceramics the structure is reported to have had one construction phase built during the transition from the Early Classic to the Late Classic period and to have continued to be used into Terminal Classic times (A.F. Chase and D.Z. Chase 2005, Fig. 7b). Another incomplete three-pronged support was also recovered in the core of an eastern building of a squarish shape at the Mono Residential Group in Caracol, south of the southwest walled area of the site. The support was dated to the Late Classic period (A.F. Chase and D.Z. Chase 2000: Fig. 24 and 28g).

7.6.5. Conclusion

In general, the chronology and provenience of pronged-supports is not very clear. Although preliminary, the information from the contexts presented above would suggest the use of these vessels in the central and southern Maya lowlands possibly during the Late Classic period, and more clearly during the Terminal Classic and Postclassic periods. Interestingly, the collection of censer materials of the Proyecto Atlas Arqueológico de Guatemala has fragments of pronged supports which have been assigned to the Preclassic, Early Classic, Late Classic, Terminal Classic, and Postclassic periods, suggesting a long use life of these supports through time in the southeastern Maya area. However, the small size of some of these materials and the type of context where the fragments were found—which are not presented here—makes the chronology assigned to these materials less secure than the fragments presented in Table 11. Ferree (1972: Figs. 3 and 4) has placed prongs of three-pronged supports from Tikal under the Zinic and Holom Complexes during the Late Preclassic period. The material recovered in residential areas presented above in central areas of sites as well as in areas at different distances from these was found in eastern structures. In addition, two specimens were found in a circular terraced structure in the top of a hill where ritual practices would have been conducted. The two specimens found in the context of a burial at Caracol suggest the placement of three-pronged supports with the deceased in funerary rituals, perhaps as personal belongings.

The fragments of pronged-supports present in the Atlas Arqueológico de Guatemala collection (some of which are not included here because they were found in mixed contexts or due to their small size), were recovered from central areas of sites as well as from areas at different distances from the main ceremonial and administrative areas of sites. Examples of central areas of sites where fragments of three-pronged supports were recovered include the Acropolis of Ixtonton 2, the Plaza Sur of Mopan 3-Este, and the ceremonial Group 118-A at Calzada Mopan. More distant and 'residential' groups where three-pronged support fragments were recovered include Ixtonton 45 and Groups 109 and 1 at Calzada Mopan. The three-pronged support fragments from Tikal illustrated by Ferree (1972) were recovered from the core area of the site in the Great Plaza and the North Acropolis, as well as in more peripheral areas of the site, such as Group 5C-III and Group 6E-I. Three-pronged support material from Quiriguá was recovered predominantly from the Acropolis of the site throughout the site's history, as well as from the Great Plaza. The material from these locations has been dated as early as the Construction Stage 3 (CS3) at the site[34]. Three-pronged supports have also been recovered from the area outside Quiriguá's site core and the materials were assigned to the early stages of Quiriguá's history (Benyo 1979: 49-50).

7.7. CONTAINERS WITH OUTFLARED WALLS (WITH BURNING EVIDENCE IN THEIR INNER SURFACES)

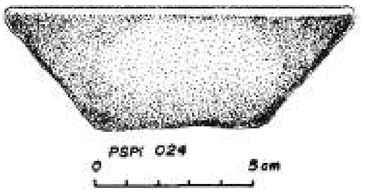


Figure 45 Vessel PSPI 024, Proyecto Atlas Arqueológico de Guatemala (drawing: Jorge E. Chocón)

---

[34] Excavations within the site-core of Quiriguá recorded a sequence of occupation of (ca. A.D. 550-850). The earliest construction phase in Quiriguá is CS4 assigned to the Middle Classic period and the latest CS1 assigned to the Terminal Classic period (Benyo 1979: 34).

Table 12 Distribution of containers with outflared walls

Cataloue ID	Project	Site	Context ID	Context Information	Associated Period	Fragmen-tation	Fig. No
Lot 2712-1, 2, 3, 4	Proyecto Petén-Noroccidente La Joyanca	La Joyanca	Op. 123, Lot 2712	Main Plaza, Structure 6E-1, within niche of a wall that united two cuadrangular features (perhaps benches) on the structure's central axis	Terminal Classic (Tuspan Complex) but could also be Postclassic	Complete	34
PN-24A-4-4	Proyecto Piedras Negras	Piedras Negras	PN-24-4-4	In front of Structure O-21, Burial 30	N/A	Semi-complete	63
306882	Proyecto Arqueológico Regional Petexbatun	Aguateca	AG 14A-4-4h	Structure M8-10 (to the east of the Causeway), on the floor of the north room of the structure	Terminal Classic	Complete	16
PSPI 24	Proyecto Atlas Arqueológico de Guatemala	Aktun Ak' Ab	30-12-13-1	Aktun Ak' Ab cave, Camara 12 (E), surface	Terminal Classic	Complete	22c
614960 n.1	Proyecto Arqueológico Regional Petexbatun	Dos Pilas	DP 15J-6-2	Group K4-1, Str. K4-2	Late Classic	Incomplete	7c

7.7.1. Description and background

The containers included in this section have burning evidence on their inner surfaces. The inference that these vessels were used as incense burners is based on evidence of burning and in some cases also on form, decorative and/or functional elements (such as spikes, circular vents, and cross-shaped perforations) commonly found in incense burners, as well as on contexts of recovery and associated materials.

7.7.2. Distribution of containers with outflared walls and burned inner surfaces in my sample

(Table 12)

7.7.3. Structure/context summary

The containers with outflared walls presented in Table 12 were recovered from the following contexts: within a niche in a wall in the building of Structure 6E-1, which consisted of a substructure of two platforms (measuring 1.70 m high) and a third lower platform on top of which rested a building, located in the north of the Main Plaza of La Joyanca; in a burial in front of Structure O-21 in Piedras Negras; in a context associated with Structure K4-2, located in the east side of the plaza of a residencial group located 200 metres northeast of the Main Plaza of Dos Pilas, in a cave, and on the floor of the room of a structure located to the east of a causway in Aguateca.

7.7.4. Evidence from other sites

Some of the containers with outflared walls or *cajetes* found in association with the hollow and tubular cylindrical censer stands with flanges and a central modelled effigy representation found at Palenque and which sometimes contained burned resins may fall into this category of vessels (Cuevas 2004: Fig. 27), although the vessels associated with the cylinders at Palenque had higher walls (some were cone-shaped).

7.7.5. Conclusion

The vessels selected in my sample were dated to the Late Classic or Terminal Classic periods. The contexts in which the vessels were recovered suggest their use in a variety of ceremonial contexts in epicentral areas of sites as well as in areas at some distance from the main public/administrative and ceremonial centres of sites. The presence of vessel PSPI 24 in a cave suggests that small containers with outflared walls may have been used in rituals for burning incense or other material. The vessel in an eastern structure within a residencial group at Dos Pilas (perhaps a shrine) may indicate the use of these kinds of vessels to burn incense in rituals conducted by a family or lineage, however, it is not clear what the function of this structure was. Vessel PN-24A-4-4 found in association with a burial may have been personal and/or may have been used to burn incense or other material at a funeral. The vessels found in Structure 6E-1, an important ceremonial structure in the Main Plaza of La Joyanca with decorative elements typically found in incense burners suggest the ritual use of these kinds of vessels with outflared walls to burn incense. However, the function of Structure 6E-1 in La Joyanca is not clear, as it is the case with Structure M8-10 which has been identified as the house of a scribe.

7.8. VESSELS WITH HIGH WALLS AND EVERTED RIMS (WITH BURNING EVIDENCE IN THEIR INNER SURFACES)

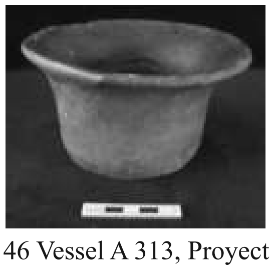


Figure 46 Vessel A 313, Proyecto Atlas Arqueológico de Guatemala

Table 13 Distribution of vessels with high walls and an everted rim

Catalogue ID	Project	Site	Context ID	Context Information	Assigned Period	Fragmentation	Fig. No
PSPI 313	Proyecto Atlas Arqueológico de Guatemala	Ixtonton 2	5-200-52	Acropolis, Plaza A, Structure 3, *Escondite* 18	Terminal Classic	Complete	28b
12C-599	Tikal Project	Tikal	12C-111/1; 12C-177/14; 12C-186/15; 12C-173/8A; 12C-203/16 (subsumed under 12C-599)	North Acropolis, Structure 5D-34-1st within the temple rooms and in the back dirt down the front of the structure	Late Classic (Ix and Imix Complexes)	Complete	64
5D-5-25-9A	Proyecto Templo V	Tikal	5D-5-25-9	Burial PTV-2 excavated in bedrock in the axis of the upper room of Structure 5D-5 (Temple V)	early Late Classic	Complete	15

7.8.1. Description and background

The vessels referred to in this section are included due to their burned interiors and in some cases their association with other vessels that may have also been used in activities related to the burning of incense.

7.8.2. Distribution of vessels with high walls and everted rims in my sample (Table 13)

7.8.3. Structure/context summary

Vessel A-313 (Figure 28b) was recovered from Structure 3 in Plaza A of an Acropolis type of group at the site of Ixtonton. The group is located on a partially modified hill in the western extreme of the Central Area of the site and is united to it through the West Causeway. Structure 3 was located in the south of the plaza and consisted of a high platform of four terraces, a central stairway which led to a central building, and two lateral shrines (*templetes*). The vessel was found in a cache identified as an *escondite* (Escondite 18) together with vessel A-312 (Figure 28a) interred at the foot of the Late Classic stairway of the building, before the following Terminal Classic construction phase. Both vessels have burned inner surfaces. Based on ceramics and stratigraphy the cache was dated to the Terminal Classic period (Juan Pedro Laprote, personal communication 2006).

Vessel 12C-599 was recovered from Structure 5D-34-1st, a platform supporting a temple in the North Acropolis at Tikal. The vessel was reconstructed from fragments of different lots within the rooms of the temple and in the back dirt down the front of the structure. The materials on the floors of the temple were reported as Ix and Imix ceramics that would correspond to the Intermediate Classic or Late Classic period (Tikal lot cards).

Vessel 5D-5-25-9A was found in a burial in bedrock along Structure 5D-5's primary axis. Structue 5D-5 (TempleV) is located east of the South Acropolis in Tikal and was dated to the Late Classic period (A.D. 600-800).

7.8.4. Evidence from other sites

Cuevas (2004: Fig. 28) reported a vessel with high walls and an everted rim found in association with a hollow and tubular cylindrical censer stand with flanges and a central effigy representation from the site of Palenque. Another vessel with high walls and an everted rim was found at Lamanai in Structure N10-17, a possible eastern 'shrine' located in the Ottawa Group (Elizabeth Graham, personal communication 2009). The vessel was found in cache N10-17/8 (Figure 99a) and was reported to have contained 'evidence of use as a censer'. The vessel was found in association with another vessel (578/4, Figure 99b) (David Pendergast, personal communication 2007) which, based on its form may have also been related to the burning of incense. The vessels were dated to the Terminal Classic period.

7.8.5. Conclusion

The contexts of the vessels presented above suggest that vessels with high walls and everted rims were used—possibly among other contexts—in ceremonial structures, such as those composed of platforms supporting a central building and two lateral shrines and temples during the Late Classic and Terminal Classic periods.

7.9. SPIKED BUCKET-LIKE VESSELS WITH FLARED WALLS (WITH AND WITHOUT BURNING EVIDENCE IN THEIR INNER SURFACES)

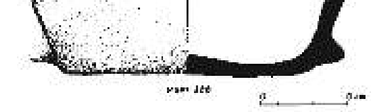


Figure 47 Vessel A 326, Proyecto Atlas Arqueológico de Guatemala (drawing: Jorge E. Chocón)

Table 14 Distribution of spiked bucket-like vessels

Catalogue ID	Project	Site	Context ID	Context Information	Assigned Period	Fragmen-tation	Fig. No
A-326	Proyecto Atlas Arqueológico de Guatemala	Ixkun	1-540-4	Burial 244, East Structure, Group 10-B	Late Classic (Tepeu 1 sphere)	Complete	9
PN 41D-16-2 and PN 41D-12-2	Proyecto Piedras Negras	Piedras Negras	PN 41D-16-2	Group C, South Plaza, Structure C-12, in the central room of the northern half of the Structure	Late Classic (Chacalhaaz phase)	Complete	10a

7.9.1. Description and background

Three spiked bucket-like vessels from my sample of analyzed materials were dated to the Late Classic period. Another vessel from Yaxchilan that would fall into this group is reported by López (1989: 174-175, Fig. 56) who assigned it to the Yaxmuc Complex (A.D. 732-810; 0.15.0.0.0.-9.19.0.0.0.) which is marked by the introduction of Fine Paste ceramics and assigned to the Terminal Classic period (López 1992: 18-21).

7.9.2. Distribution of spiked bucket-like vessels in my sample (Table 14)

7.9.3. Structure/context summary

Vessel A-326 was recovered from the East Structure of a residential group (Group 10-B) located southeast of the site of Ixkun. It was found in Burial 244, together with two polychromed hemispheric vessels of the ceramic type Saxche Naranja Policromo: Saxche. The burial was dated to the Late Classic period or Tepeu 1 sphere. The vessel is no longer held by the Proyecto Atlas Arqueológico de Guatemala and I was unable to see its interior. The project has kept a photographic record of it (Laporte and Mejía 2005: 120-125).

Two vessels, PN41D-16-2 and PN41-12-2 (Figure 10a) were recovered from Structure C-2, likely to have been ritual or administrative, located in the South Plaza of Group C at Piedras Negras. The Structure had a stair, which was excavated on its eastern side. Only the eastern section of the Structure was excavated. The excavated section was composed of two rooms, one of which contained a niched bench. The spiked vessels were found one on top of the other in the niche of the bench of the central room, which was located in the northern half of the structure. The interiors of both vessels were burned. Based on ceramics and stratigraphy, the censers were dated to the Late Classic or Chacalhaaz ceramic phase (Jackson 2001: 117-131; René Muñoz, personal communication 2006).

7.9.4. Evidence from other sites

A spiked vessel with flaring walls, which may not fall into this category given that it is smaller and that its form is somewhat different to that of the bucket-like vessels, has been excavated at the site of Holmul. The vessel (LT13.01.02, Figure 65) was recovered from a looters' trench in Structure 2 in Court A, Group III at the site and it was assigned a most likely Terminal Classic date (Michael Callagham, personal communication 2006).

7.9.5. Conclusion

The information above suggests the use of spiked bucket-like vessls during the Late Classic period in at least two sites of the Maya lowlands. The vessel that was found in a burial in a structure located in a residential architectural group may indicate the use of some of these vessels in funerary rituals, and/or its deposition as a personal belonging of the deceased. The other vessels were found in a structure with a bench which would be considered a building used by site elites likely for administrative and/or ritual purposes. The contexts presented here may reflect rituals of importance to individuals rather than the site as a whole.

7.10 SEATED-EFFIGY COVERS

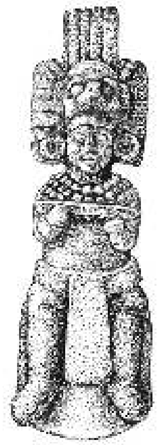


Figure 48 Seated-effigy cover from offering PTV-2, Proyecto Templo V (drawing: Jaime Borowics)

7.10.1. Description and background

Seated-effigy covers are described by Ferree as symmetrical male figures seated on 'a cover like an inverted bowl', which could be placed on top of pedestal-based censers. The interiors of the head, torso and base of the figures are hollow and interconnected and the effigies have vents in the back of the head and torso. The hands of the figures are usually placed in front of the body or resting on the knees, palms up, and the legs are either crossed or hang down

Table 15 Distribution of seated-effigy covers. Lot information from Structure SE-486 at Uolantun is quoted from lot cards written by Dennis Puleston and kept at the University of Pennsylvania

Catalogue ID	Project	Site	Context ID	Context Information	Assigned Period	Fragmentation	Fig. No
12U-82a/16	Tikal Project	Tikal	12U/16	North Acropolis, Structure 5D-32, excavation through Unit 1 (bench)	early Late Classic (Time Span 6)	Complete	12a
12K-131/ 10 as written on the object but recorded by Ferree as 12K-131/15	Tikal Project	Tikal	12K/ 10	Structure 5D-33-2nd, fill of the rear chambers of the Early Classic temple above floor and around Stela 31.	Intermediate Classic (Ik pottery)	Semi-complete	14c
12K-396/4,15,17	Tikal Project	Tikal	12K/4, 15, 17	Structure 5D-33-2nd, burned debris in the rooms of the Early Classsic temple especially around Stela 31.	Intermediate Classic (Ik pottery)	Semi complete	14b
12L-197/34	Tikal Project	Tikal	12L/34	Structure 5D-33-1st; level E fill; east half (cf. lot 31); separated by TIK wall N-S on approx. axis. Contents: sherds, etc.		Fragment	66
Offering PTV-2	Proyecto Templo V	Tikal	5D-5	Structure 5D-5 (Temple V), within the nineth *muro de encajuelado* of the substructure	early Late Classic	Complete	11b
135A-651/95 PD. 202 and 135A-321/19 PD. 191	Tikal Project	Uolantun	135A/95, 19	Structure SE-486. Lot 95 (PD. 204): 'deposit of incensarios and carbon intruded into floor of AUROCHS str. between door jambs going into back room. Patch was laid over the deposit. The floor into which the deposit was intruded was burned. This lot guaranteed pure'. Lot 19, (PD. 191): 'Surface collection. Location: east side of pyramid at Uolantun. About 50 cm to the right of section at 19, 8 m from base measured from west side' Contents: sherds and incensario fragments'.	Terminal Classic	In-complete	27c
135A/44 and 3; 135A-661/88 PD. 193; 135A-662/27; 135A-662/95 PD. 202 as written on the object, but recorded by Ferree as 135A-560/24 (-328)	Tikal Project	Uolantun	135A/44, 88, 27, 95	Structure SE-486. Lot 44, (PD. 193): 'Uolantun. On floor of 1st room of temple building. Large deposit of incensarios, and pots, hearth, etc. See also lot 88'. Lot 88 (PD. 193): 'Equivalent to lot 44, in front room of temple, north of main section (Str SE-…-1stA, room 2)'. Contained pottery censer fragments and partially reconstructable vessels. Lot 27, (PD. 191): '1 metre trench up on E. side of temple at Uolantun. 19-20 metres from base of section on west side. Surface to 40 cm. (…)'. Lot 95 (PD. 204): 'deposit of incensarios and carbon intruded into floor of AUROCHS str. between door jambs going into back room. Patch was laid over the deposit. The floor into which the deposit was intruded was burned. This lot guaranteed pure'.	Terminal Classic (Eznab, on the basis of fragment from lot 44)	Fragment	27a
135A-605/44; 135A-322/27 PD. 191	Tikal Project	Uolantun	135A/44, 27	Structure SE-486. Lot 44 (PD. 193): 'Uolantun. On floor of 1st room of temple building. Large deposit of incensarios, and pots, hearth, etc. See also lot 88'. Lot 27, (PD. 191): '1 metre trench up on E. side of temple at Uolantun. 19-20 metres from base of section on west side. Surface to 40 cm. (…)'.	Terminal Classic (Eznab, on the basis of the fragment from lot 44)	In-complete	23 and 24a

Catalogue ID	Project	Site	Context ID	Context Information	Assigned Period	Fragmentation	Fig. No
135A-352/44; 135A/88	Tikal Project	Uolantun	135A/44, 88	Structure SE-486. Lot 44, (PD. 193): 'Uolantun. On floor of 1st room of temple building. Large deposit of incensarios, and pots, hearth, etc. See also lot 88'. Lot 88, (PD. 193): Equivalent to lot 44. In front room of temple, north of main section (Str SE-…-1stA, room 2)'. Contained pottery censer fragments and partially reconstructable vessels in front room of temple.	Terminal Classic (Eznab)	In-complete	24c
135A-613/44	Tikal Project	Uolantun	135A/44	Structure SE-486. Lot 44, (PD. 193): 'Uolantun. On floor of 1st room of temple building. Large deposit of incensarios, and pots, hearth, etc. See also lot 88'.	Terminal Classic (Eznab)	Fragment	25c
135A-629/27,67,88	Tikal Project	Uolantun	135A/27, 67,88	Structure SE-486. Lot 27, (PD. 191): '1 metre trench up on E. side of temple at Uolantun. 19-20 metres from base of section on west side. Surface to 40 cm. (…)'. Lot 67, (PD. 191): 'Main temple Uolantun. Back of temple, E-W trench, parallel to and alongside, but north of, earlier trench down back of temple. Dug in an effort to find more of censers that were in back room of temple. Started out as being 1 m. wide but extended to 1½-2 m. (…). Collapse and contents of room'. Contained large pieces of censer fragments. Lot 88, (PD. 193): Equivalent to lot 44. In front room of temple, north of main section (Str SE-…-1stA, room 2)'. Contained pottery censer fragments and partially reconstructable vessels in front room of temple.	Terminal Classic (Eznab)	Fragment	24b
135-651/95	Tikal Project	Uolantun	135A/95	Structure SE-486. Lot 95 (PD. 204): 'deposit of incensarios and carbon intruded into floor of AUROCHS str. between door jambs going into back room. Patch was laid over the deposit. The floor into which the deposit was intruded was burned. This lot guaranteed pure'.	Possibly Terminal Classic	Fragment	27c

the front of the cover base. The figures wear a breechclout wrapped around the hips as well as an overhead mask that usually has a vertical plaque (Ferree 1972: 119). Seated-effigy covers from the sites of Tikal and Uolantun have been assigned to the Tulix Complex (for censers) corresponding to the Ik and Imix Complexes of Tikal ceramics dated to the Late Classic period (Ferree 1972: 118-128). A more recent assessment of materials by Fry in 1974 from lots 44 and 88 excavated on the floor of Structure SE-486 at Uolantun indicates an association of seated-effigy cover material with Eznab ceramics, which would suggest that the covers were also used during the Terminal Classic period (Tikal Problematical Deposit Cards). A fragment of a human head and headdress with a plaque recovered at Uaxactun and dated to Tepeu 3 or Terminal Classic period (R.E. Smith 1955: Fig. 31d, 2) may support the use of these covers during Terminal Classic times.

7.10.2. **Distribution of seated-effigy covers in my sample** (Table 15)

7.10.3. Structure/context summary

The sample of seated-effigy cover materials presented in Table 15 are from the sites of Tikal and Uolantun and have also been studied by Ferree (1972). The materials selected in this analysis were recovered from four temples that consisted of a pyramidal platform that supported a building on top: 5D-32-1st, 5D-33-2nd and 5D-5 in Tikal, and SE-486 in Uolantun. They were found in the following general contexts: on the floors and intruded into the floors of the rooms of temples, in one case in association with a stela within the temple, in a pit beneath a bench of the rear room of a temple, and within the substructure of one of the temples.

7.10.4. Evidence from other sites

Late Classic seated-effigy covers have also been found in the context of a royal tomb in Structure 10L-26 known as Temple 26, a pyramidal structure located on the northern edge of Copan's Acropolis (Fash 1991: 107, 109; Fasquelle and Fash 1989: 480-486).

7.10.5. Conclusion

The materials discussed suggest that seated-effigy covers were used in the Late Classic and Terminal Classic periods. The information also suggests an association of seated-effigy covers with temples in main ceremonial/administrative areas of sites and perhaps at some distance from these areas, if the temple at Uolantun is considered to be located in a peripheral area. The examples of seated-effigy covers included in this section were recovered from temples associated with royal rule. Their ritual use appears to have a relation with rituals conducted for deceased rulers or other elite members given the specific contexts where they were found in relation with burials and their use in termination rituals conducted in the temples (see Sections 6.1 H, I, and J). The extension of seated-effigy covers into Terminal Classic times suggests late manifestations of Classic kingship or royal rituals.

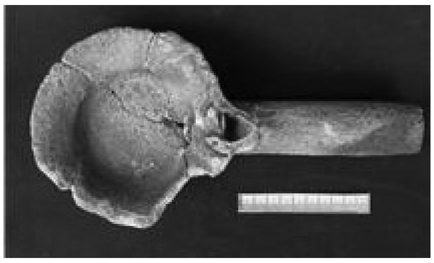


Figure 49 Ladle censer from Machaquila

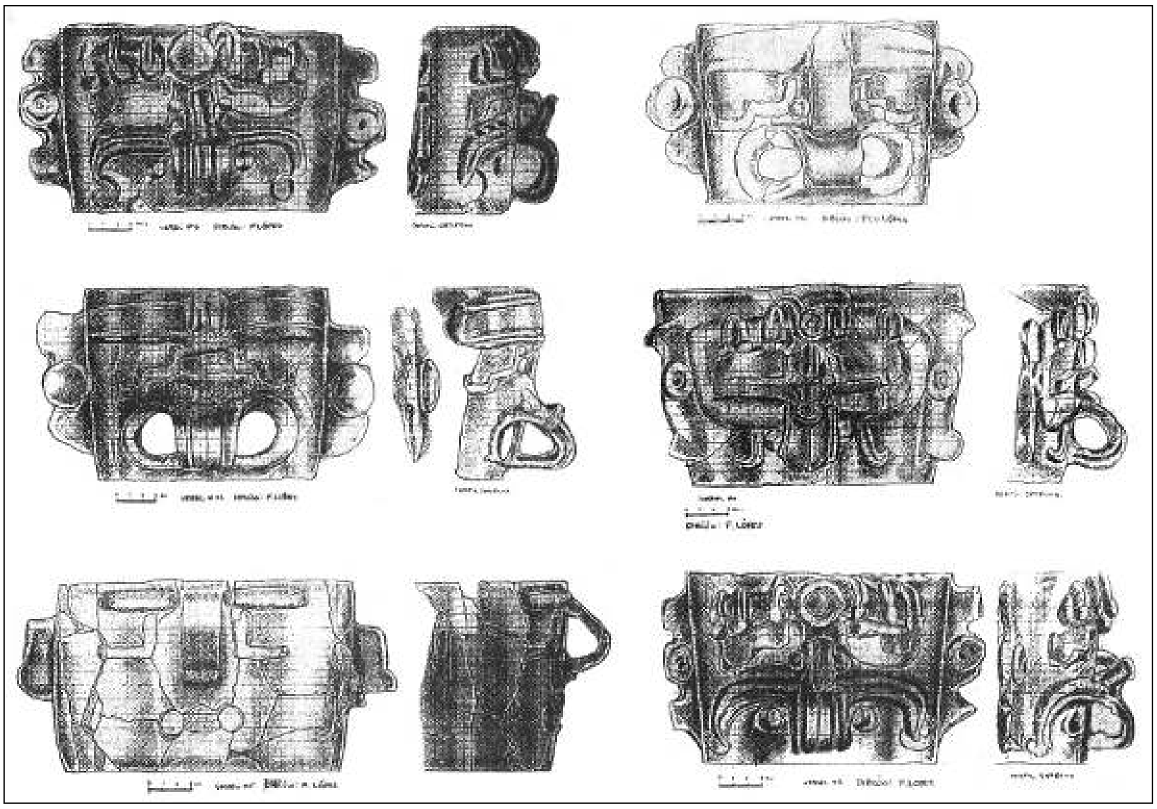


Figure 50 Preclassic censers recovered by the Rescate Arqueológico at the island of Flores, Peten, IDAEH-AEROLUX-PRIAMPEG from unit VII-2a (drawings: F. López)

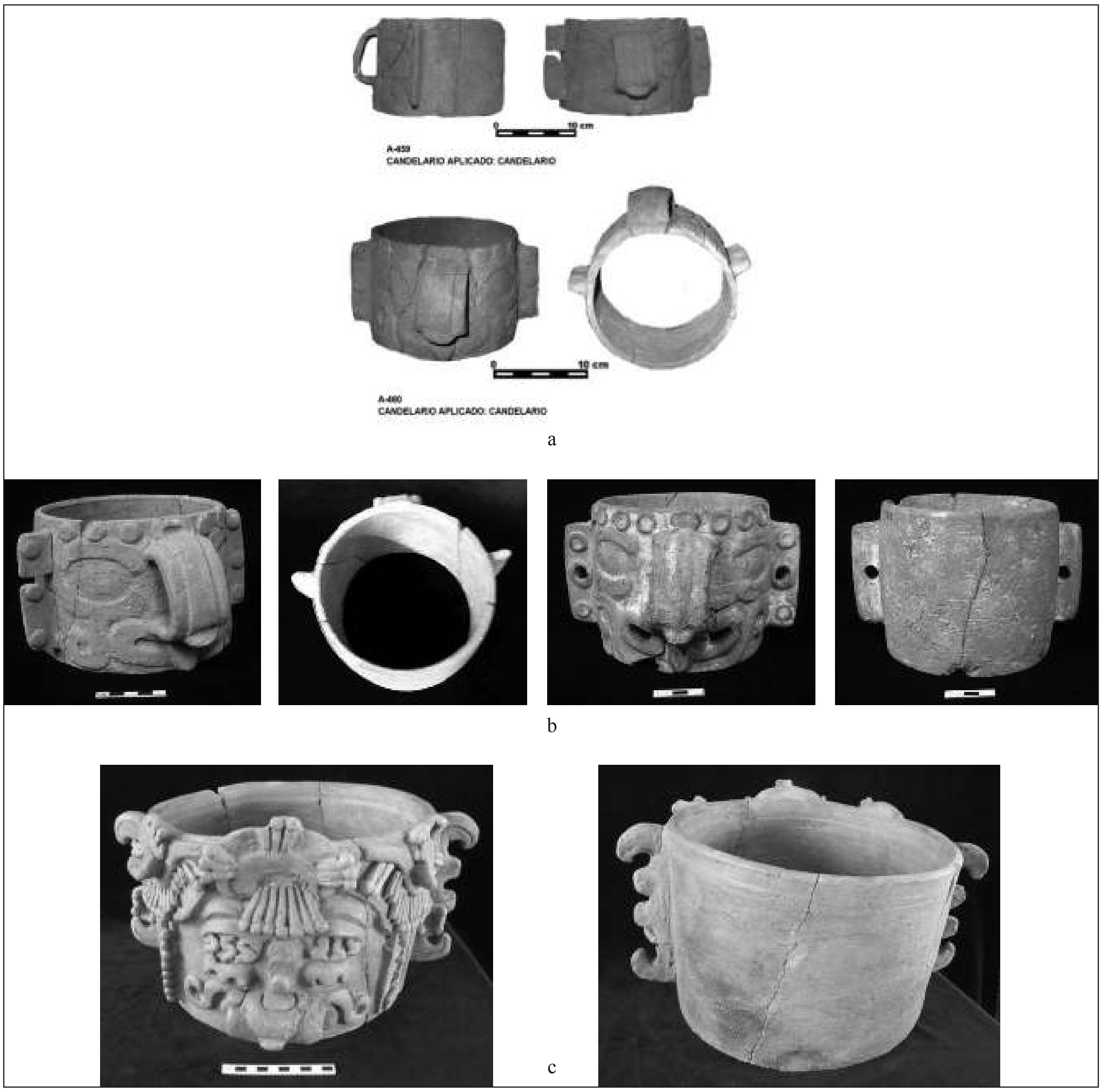

0
10 cm
A-459
CANDELARIO APLICADO: CANDELARIO
0
10 cm
A-460
CANDELARIO APLICADO: CANDELARIO
a
b
c

Figure 51 (a) Early Classic censer stands A-459 and A-460 from Structure EII, Uaxactun (photo: courtesy of Juan Pedro Laporte) (b) Early Classic censer stands MNAE 7887A and 7887B from Structure E-VII, Uaxactun (photos: author, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala) (c) Early Classic censer stand A-325 from the northern structure of the East Group at Sacul, excavated by the Proyecto Atlas Arqueológico de Guatemala

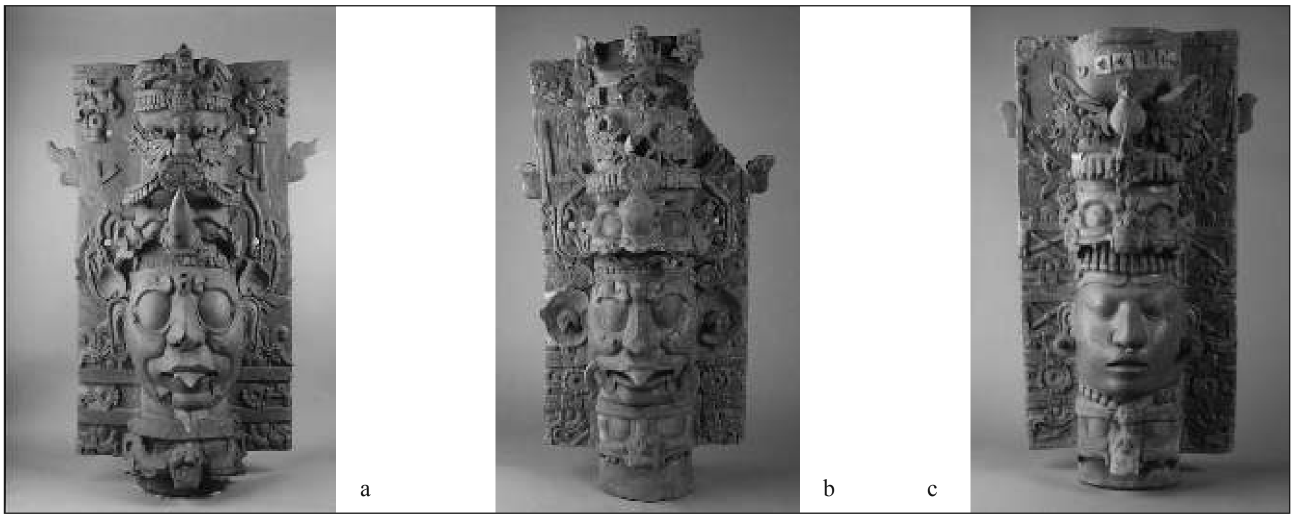


Figure 52 (a) Censer stand (element 2/93) with the central mask representation of GIII, Temple of the Foliated Cross, Palenque (b) censer stand (element 2/97) with the central mask representation of GI, Temple of the Cross, Palenque (c) censer stand (element 3/93) with the central mask of a human portrait, Temple XV-A, Palenque (photos a, b, c: Javier Hinojosa, Proyecto Arqueológico Palenque)

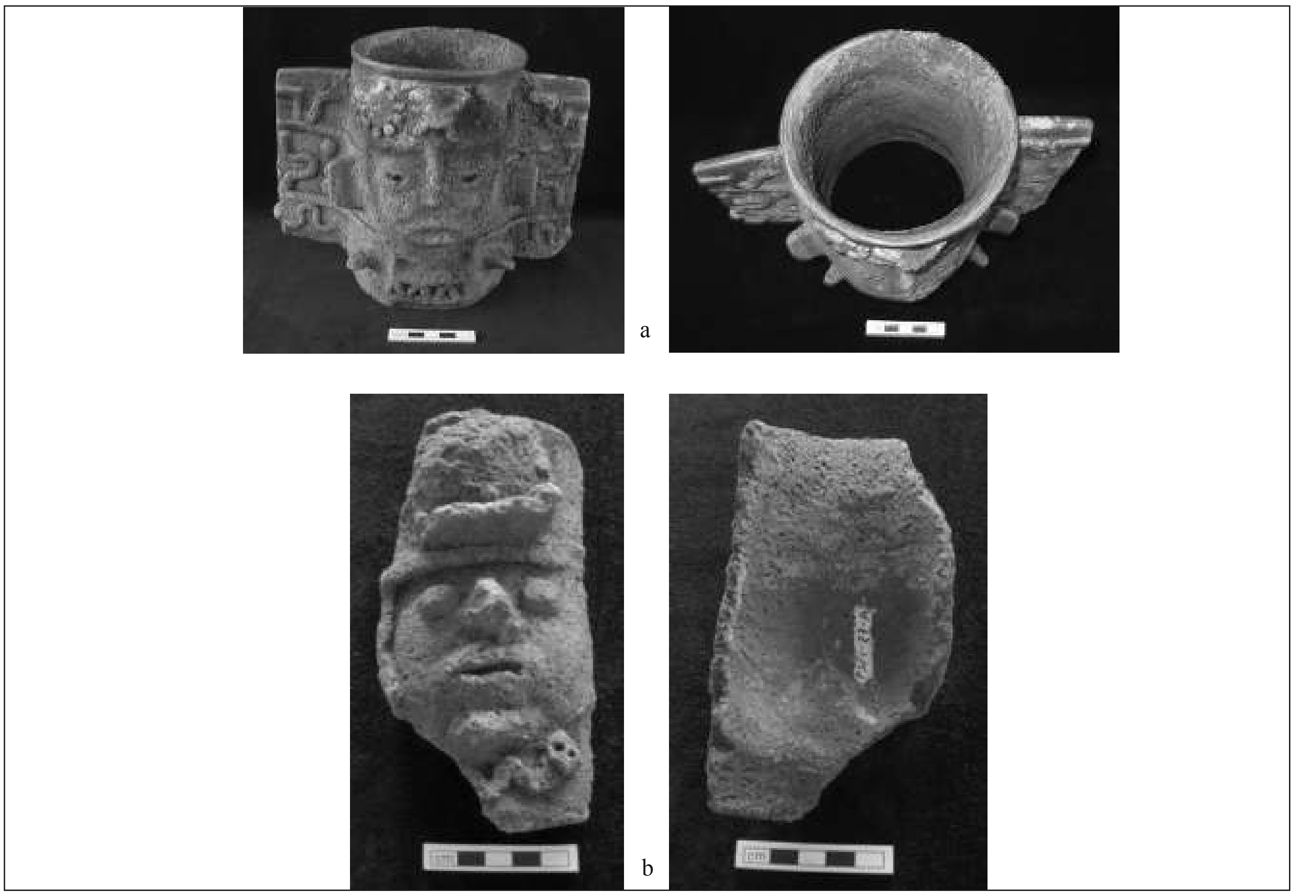


Figure 53 Censer stands from Limones, donation to the Proyecto Atlas Arqueológico de Guatemala (a) censer stand A 314 with the representation of a human portrait (b) fragment of censer stand PSPI 27A with a human portrait representation

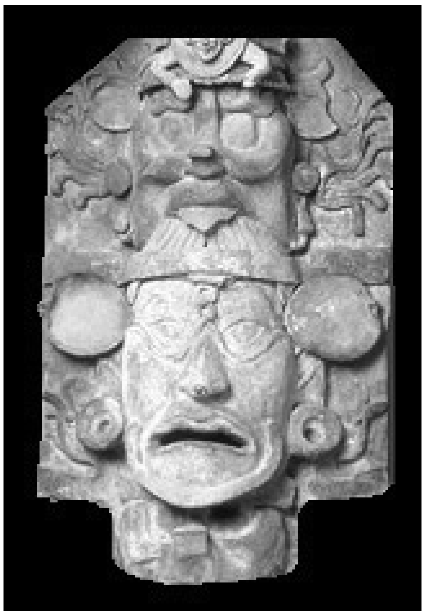


Figure 54 Censer stand of a human portrait with cruller from Palenque (photo: Linda Schele Photograph Collection, FAMSI photo number 22005)

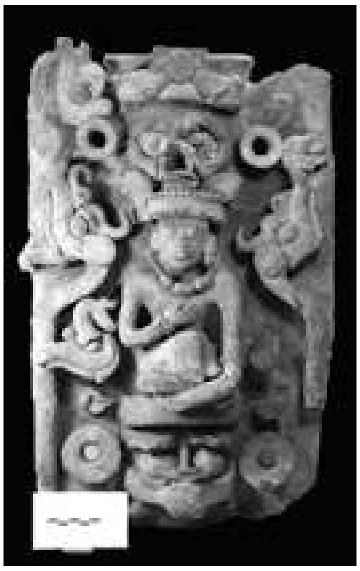
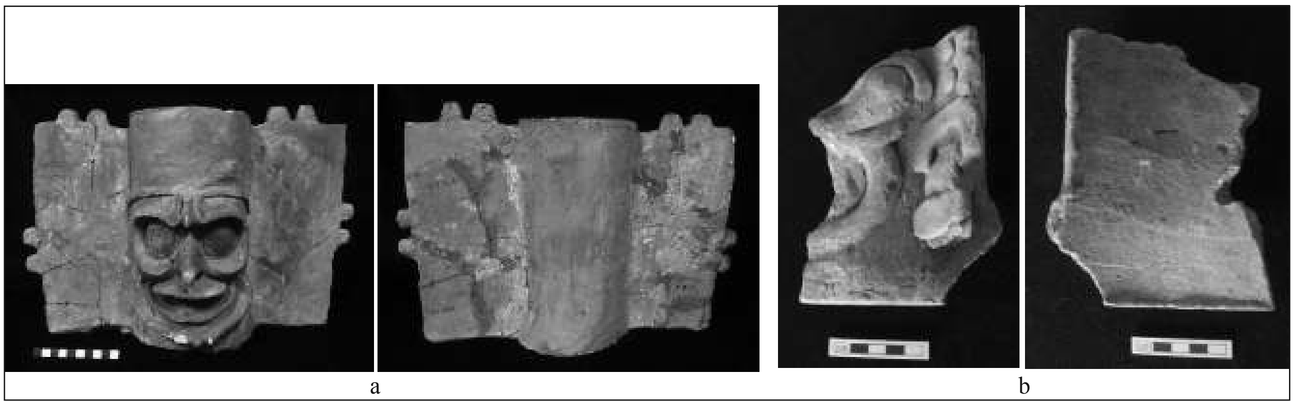


Figure 55 Hollow tubular cylindrical censer stand with flanges and a central modelled seated figure representation ANT. 022009, unknown provenience (photo: courtesy of the Peabody Museum of Natural History, Yale University)



a

b

Figure 56 (a) censer stand MN8858 from Structure A-I, Altar de Sacrificios (photo: author, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala) (b) censer stand PSPI 320 from Structure 3 at the ‘Carmen X’ Group, Calzada Mopan, excavated by the Proyecto Atlas Arqueológico de Guatemala

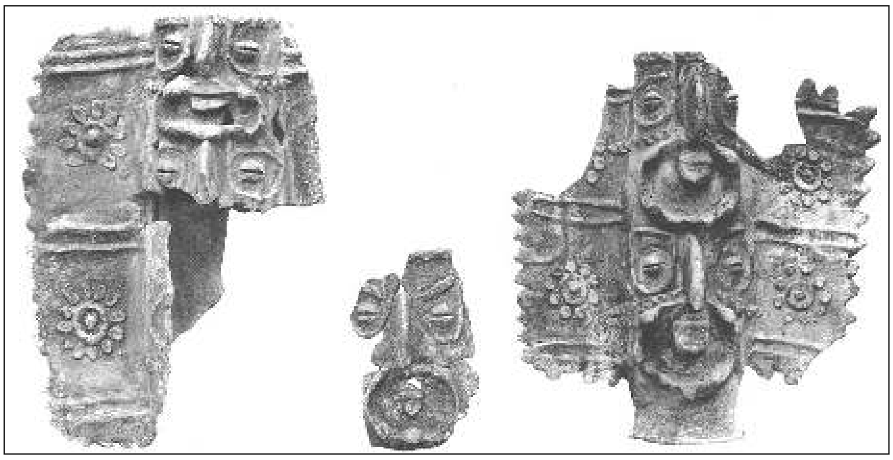


Figure 57 Censers from Hatzcap Ceel, southern Cayo District, Belize (after J. E. S. Thompson 1931: Plate XXVII)

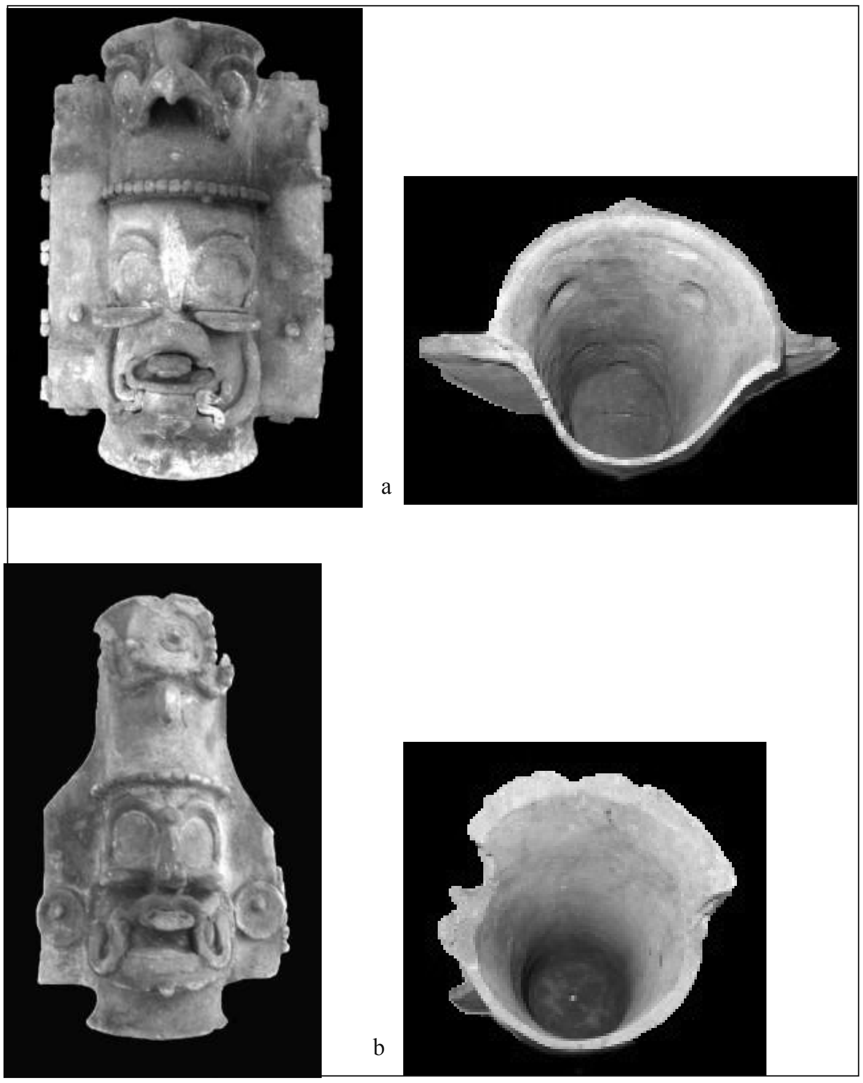


Figure 58 Tubular cylindrical stands with flanges, a solid base, and the Jaguar/Sun representation (photos: author, with permission of the British Museum (a) censer Am1938.1021.312 (b) censer Am1997.Q.855

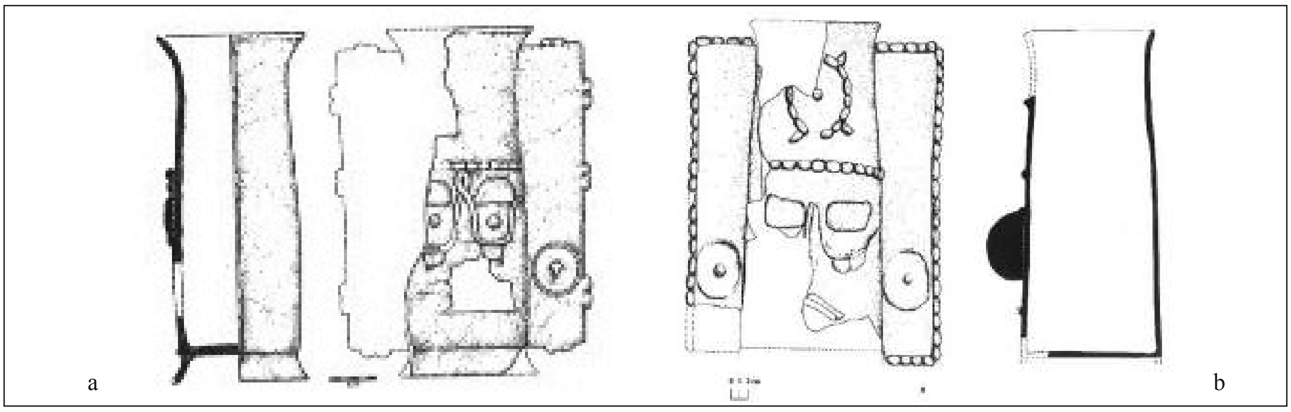


Figure 59 (a) censer from Structure B19, Caracol (after D. Z. Chase 1988: Fig. 9) (b) censer from residential group at Caracol (after A. F. Chase and D. Z. Chase 2004: Fig. 16.5a)

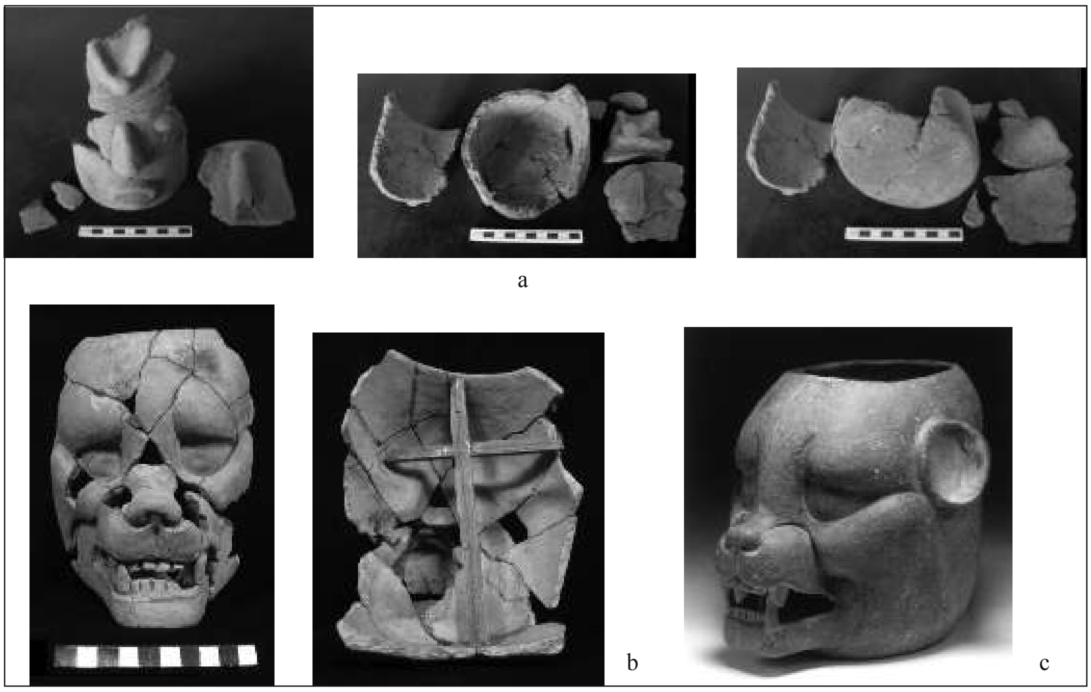


Figure 60 Vases with face effigies (a) vase PSPI 432 from Problematical Deposit 5, Plaza B, Ix Ek', excavated by the Proyecto Atlas Arqueológico de Guatemala (b) effigy vase 77-1 from Mound 14, Altar de Sacrificios, excavated by Harvard University (photo: autor, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala); c) effigy vase from Tabasco held at the Museo Nacional de Antropología, Mexico (after Martínez 2004: 259)

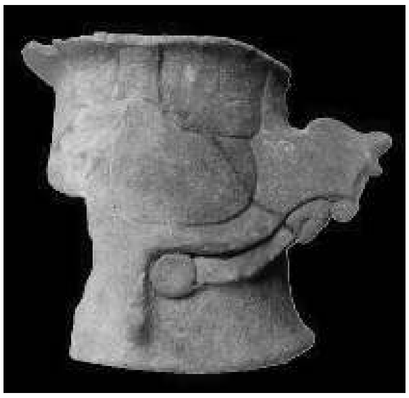


Figure 61 Flanged zoomorphic pedestal-based censer from Structure IV B located in the Main Plaza of Calakmul, excavated by the Proyecto Arqueológico Calakmul (after Boucher and Palomo 2000: Figure 11)

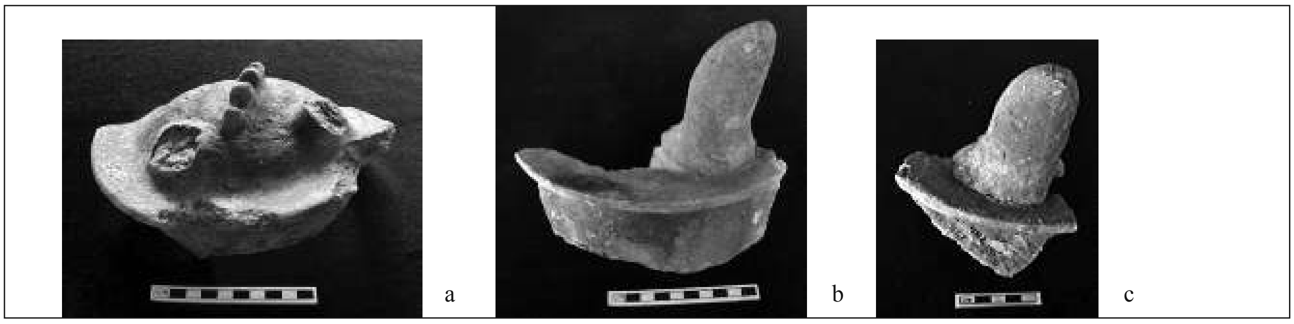


Figure 62 Three-pronged supports from Calzada Mopan, excavated by the Proyecto Atlas Arqueológico de Guatemala (a) specimen PSPI 297, Calzada Mopan (b and c) specimens PSPI 442 and PSPI 443, from the main structure of Group 1, Calzada Mopan

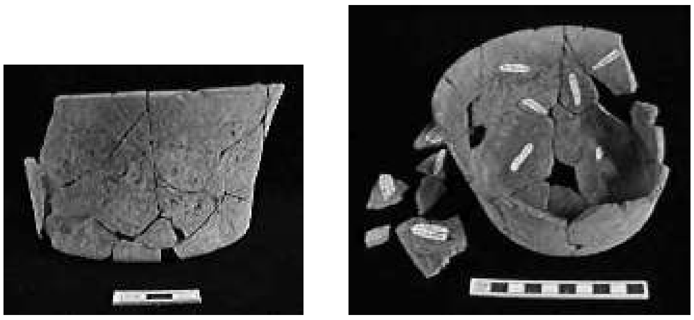


Figure 63 Container with outflared walls PN-24A-4-4 from Burial 30 in Structure O-21, Piedras Negras (photos: author, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala)

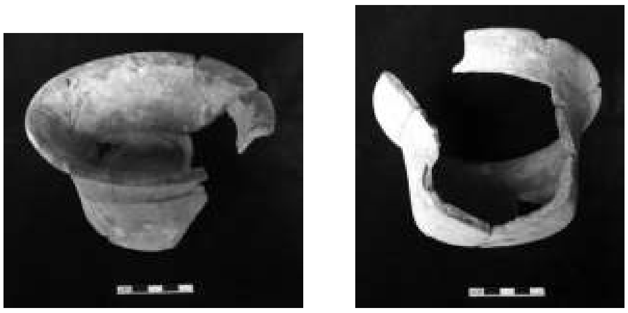


Figure 64 Vessel 12C-599 from the interior room and backdirt down the face of Structure 5D-34, Tikal, excavated by the Tikal Project

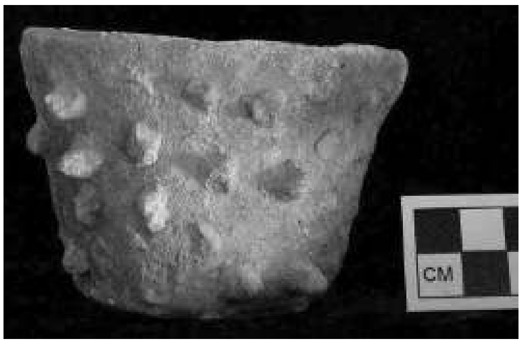


Figure 65 Spiked flaring bowl from Holmul LT13.01.02, Structure 2, Court A, Group III, Holmul (photo: courtesy of Michael George Callagham, Proyecto Holmul)

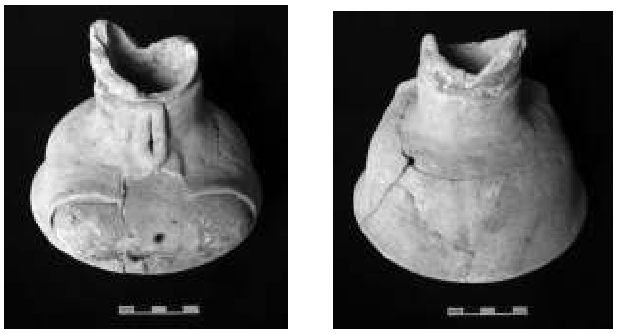


Figure 66 Seated-effigy cover fragment 12K-197/34 from Structure 5D-33, Tikal, Tikal Project

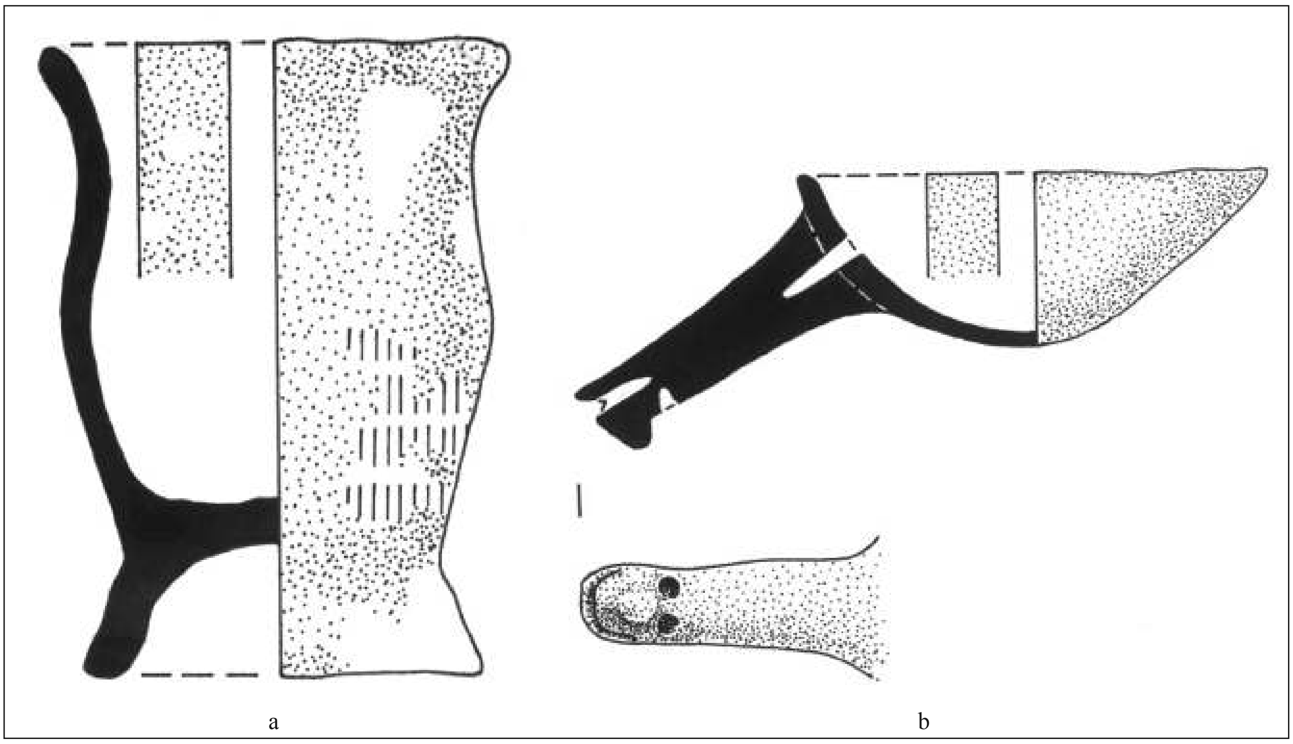


Figure 67 Burial N10-4/5, Lamanai, Buk Phase (a) pedestal-based vessel 71/5, not demonstrably a censer but the form suggests its use as an incense burner (b) ladle censer 71/6 (drawings: Louise Belanger, Lamanai Project)

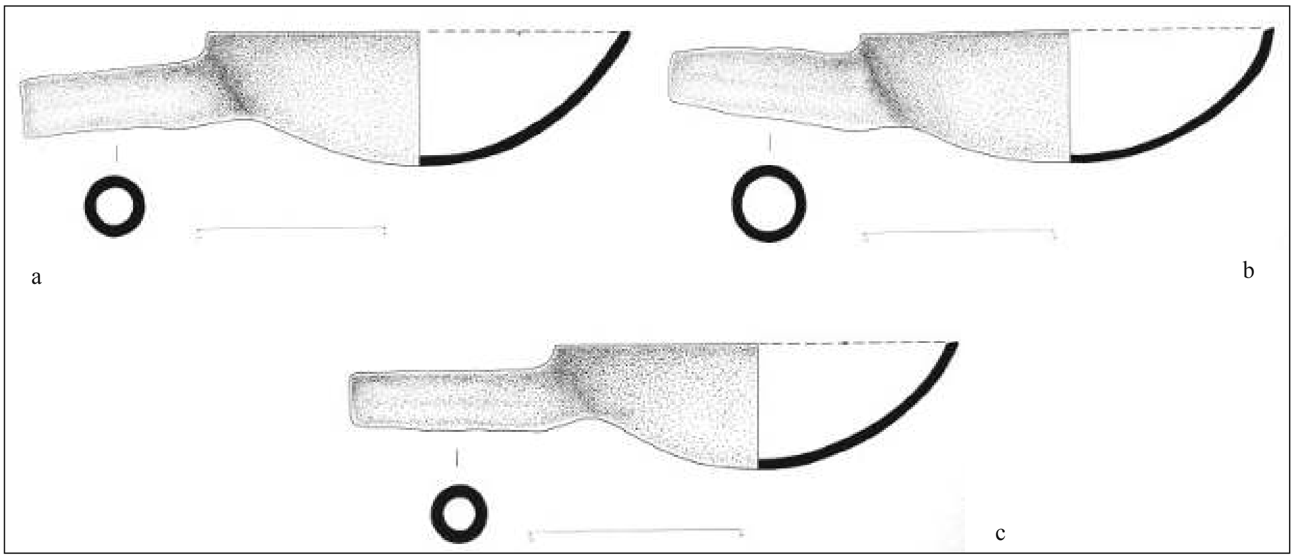


Figure 68 Hunchback Tomb, Late Postclassic (probably early 16th century) (a) ladle censer 774/10 (b) ladle censer 774/4 (c) ladle censer 774/5 (drawings: Louise Belanger, Lamanai Project)

8. THE TRANSITION FROM THE CLASSIC TO POSTCLASSIC PERIOD BASED ON A CONTEXTUAL AND DIACHRONICAL ANALYSIS OF INCENSE BURNERS

8.1. INTRODUCTION

The purpose of this chapter is to suggest interpretations concerning some of the changes and continuities in the use of incense burners during the Classic to Postclassic transition. The interpretations are focused on hollow cylindrical stands with flanges and the representation of the Jaguar/Sun, ladle censers, spiked pedestal-based censers, seated-effigy covers, and flanged zoomorphic pedestal-based censers given the certainty that these objects were used as incense burners or as parts of incense burners.

The first part of this chapter summarizes some of the information related to the use of incense burners through time and the contexts of recovery of the censers or censer parts from primary and secondary contexts as presented in Chapters 6 and 7. It also points out the in situ association of censers or censer parts within specific archaeological contexts in order to show temporal overlaps in the use of specific kinds of censers.

In the second part of this chapter I present some interpretations of the temporal span and contextual associations of different kinds of censers or censer parts previously mentioned in relation to changes and continuities in the manufacture and use of incense burners in the Classic to Postclassic transition. The discussion is especially made with a consideration of ideas present in the literature in regards to the use of incense burners during the Terminal Classic and Early Postclassic periods.

The third part of this chapter involves a discussion of the possible introduction of foreign ideas related to the manufacture and use of incense burners in the Maya lowlands during the end of the Classic period. Possible places of origin of some of the traditions associated with censers thought to have been originally foreign to the Maya area are proposed. However, although it is possible to identify the early presence of traditions in specific locations of Mesoamerica, attempts to identify the ethnicity of the groups of people that may have had a role in the introduction of new ideas in the Maya area will always be a difficult task and given the current state of research any proposal will remain a matter of debate.

8.2. SUMMARY OF SOME RESULTS AND INTERPRETATIONS OF THE CONTEXTUAL AND DISTRIBUTIONAL ANALYSIS OF CENSERS OR CENSER PARTS PRESENTED IN CHAPTERS 6 AND 7

As was previously discussed, the contexts of recovery of incense burners and the presence or absence of specific kinds of vessels in the archaeological record through time can be used to understand continuities, discontinuities, and other changes in ritual practices associated with the use of incense burners in the past. Although my interpretations—which are preliminary—will hopefully represent a contribution to the understanding of some aspects of the use of censers, the limited amount of data presented in this study can only offer a partial understanding of the use of incense burners, and I hope that future excavations and work on the contexts of censers will reveal a more complete and accurate picture of the use of censers through time.

8.2.1. Ladle censers

The presence of a ladle censer in Structure 5D-5 at Tikal dated to the early Late Classic period (Section 6.1, K) suggests that ladle censers may have been used at some sites of the Maya lowlands earlier than has been previously thought (P.M. Rice 1999: 43; Sabloff 1973: 119). The reported ladle censer materials from Piedras Negras dated to the Chacalhaaz ceramic phase (A.D. 750-850) assigned to the Late Classic period (Muñoz 2008) and ladle censer fragments from the Proyecto Atlas Arqueológico de Guatemala not included in my analysis but dated to the Late Classic period, also support this idea. During the following Terminal Classic and Postclassic periods, ladle censers became very common.

The data presented suggests that ladle censers were used in epicentres of sites as well as in zones at different

Table 16 In situ association of ladle censers and other ceramic categories

X Late Classic period • Terminal Classic period □ Postclassic period

Censer ID	Hollow cylindrical stands with flanges and the Jaguar/Sun representation	Tubular cylindrical stands with flanges, a solid base, and the Jaguar/Sun representation	Vases with face effigy	Flanged zoomorphic pedestal-based censers	Spiked pedestal-based censers	Three-pronged supports	Containers with outflared walls	Vessels with high walls and an everted rim	Spiked 'buket' like vessels with outflared walls	Seated-effigy covers	Spiked hollow Cylindrical stands
5D-25-9B, Tikal (Section 6.1, K)								X			
87-25, Altar de deSa Sacrificios (Section 6.2, M)				•							

distances from the main public/administrative centres of archaeological sites, both in ceremonial and residential groups. The ladle censers found in primary contexts have been found in association with a burial in bedrock under a high, terraced platform supporting a temple building (suggesting its use in a funerary ritual); on the floor of temple buildings supported by high, terraced platforms (suggesting their ritual use inside temples); in the fill of two rooms that were part of a temple-like building covered by a high, terraced platform on which a building was not found (a context interpreted as having been placed as part of a termination ritual); in a probable residential structure (suggesting its use in domestic rituals); in a cave; in association with a four-lobed enclosure of a ceremonial nature in the centre of a plaza; and on the floor of a structure of unknown function (in a context interpreted as part of a termination ritual).

Two ladle censers found in primary contexts from my sample of materials were in direct association with two other vessels that would have also been used in relation to the burning of incense: a flanged zoomorphic pedestal-based censer and a vessel with high walls and an everted rim. Both vessels contained burning evidence in their inner surfaces (see also Sections 6.1, K and 6.2, M, and Table 16).

Several other burials which contained ladle censers dated to the Late Classic, Terminal Classic, and Early Postclassic periods also had pedestal-based censers (Section 7.1.4), suggesting that ladle censers and pedestal-based censers of different kinds may have been used together in ritual behaviour related to the burning of incense. In this regard, Burial 69-1 from Becan assigned to the early Xcocom facet dated to the Terminal Classic period contained an effigy pedestal-based censer with flanges. Burial N10-4/5 dated to the Early Postclassic Buk phase also contained a pedestal-based censer. Burial 58/3/1 at Copan assigned to the Ejar ceramic Complex dated to the Early Postclassic contained the remains of an effigy pedestal-based jar. Tomb III at Guaytan, assigned to the Magdalena phase, also likely to be Postclassic, contained a spiked pedestal-based censer. Interestingly, an association of pedestal-based censers with ladle censers was also found at the cave of Balankanche, 4 km from Chichen Itza in a context dated to the Terminal Classic period (E.W. Andrews 1970: Figs. 7 and 47b).

8.2.2. Hollow cylindrical stands with flanges and the Jaguar/Sun representation

The data presented about hollow cylindrical stands with flanges and what has been generally identified as the Jaguar/Sun representation suggests the use of these vessels during the Late Classic and Terminal Classic periods. The vessels would have been used in core areas of archaeological sites as well as in non-epicentral areas of sites in both ceremonial and residential group architecture. One of the contexts from which the cylinders were recovered is on the floors of the buildings supported by high, terraced platforms. The context of a cylindrical stand on the floor of one of the terraces that formed the substructure of a temple at the site of Palenque also suggests the use of these stands on the floor of the terraces of pyramidal structures. Also at Palenque, the cylinders recovered from within the core of the terraces of the substructures supporting temple buildings suggest a ritual interment of the stands in these locations (Cuevas 2004). Perhaps due to the different type of excavations conducted, archaeologists have not been able to identity this pattern seen in Palenque elsewhere. Only excavations along the terraces could reveal this pattern. The censers were also found in primary context within the core of the substructures of the temples (not associated with the terraced platforms). As suggested by censer PNT 020 recovered from Structure 6C-50-2 in Group 6C-XV to the south of Mundo Perdido in Tikal, during the Late Classic period, cylinders would have also been used in eastern shrines on niches in the stairs. Hollow cylindrical stands with flanges and the Jaguar/Sun representation were also used in other kinds of eastern structures, which may have been ceremonial, but their function is not clear. Another context in which the cylindrical stands were used is in caves.

An association of flanged cylindrical stands and containers with outflared walls where incense was burned has been reported from various sites (i.e. Section 9.3.2.) although containers with outflared walls and burned inner surfaces have also been found in contexts in which they were not associated with the cylinders (Section 9.3.9.). Based on

Table 17 In situ association of hollow cylindrical stands with flanges and the Jaguar/Sun representation with other ceramic categories

X Late Classic period • Terminal Classic period ☐ Postclassic period

Censer ID	Ladle censers	Tubular cylindrical stands with flanges, a solid base, and the Jaguar/Sun representation	Vases with face effigy	Flanged zoomorphic pedestal-based censers	Spiked pedestal-based censers	Threepronged supports	Containers with outflared walls	Vessels with high walls and an everted rim	Spiked 'buket' like vessels with outflared walls	Seated-effigy covers	Spiked hollow cylindrical stands
614924 n.2 Dos Pilas (Section 6.1, D)							X				
N/A Tikal Offering PTV-2 (Section 6.1, H)										X	
12U-84a/16 and 12U-84b/16 Tikal (Section 6.1, I)				X	X					X	X
(135A/44; -618/19) and (135A-608/44; 135A-587/67) (Section 6.2, R)										•	

a consideration of my sample, it is possible that the Late Classic cylinder on Structure K4-2 from Dos Pilas was associated with a vessel with outflared walls, which has burning evidence in its inner surface (Section 6.1, D). A clearer association of hollow cylinders with flanges and the representation of the Jaguar/Sun exists in my sample with seated-effigy covers in contexts dated to the Late Classic and Terminal Classic periods (Sections 6.1, H and 6.1, I, and Table 17). The cylinders have also been found in association with spiked, pedestal-based vessels in contexts dated to the Late Classic and Terminal Classic periods. This is the case for cylinders 12U-84a/16 and 12U-84b/16 which were associated with a spiked pedestal-based censer in Structure 5D-32-1st at Tikal (Section 6.1, I) and of the cylinder found at Las Ruinas de Arenal in Structure 30-1st (Section 7.2.1.1.4.1). Another hollow cylindrical stand with flanges and the Jaguar/Sun representation was reported on a tomb in the Toucan Group of Caracol, dated to the Late Classic period, which also contained a spiked pedestal-based censer (Section 7.2.1.1.4.1.). During the Late Classic period, hollow cylindrical stands with flanges and the representation of the Jaguar/Sun also appear to have been used in rituals in association with flanged zoomorphic pedestal-based censers (Section 6.1, H) and hollow spiked cylindrical stands as suggested by the deposit of incense burners recovered beneath a bench in Room 3 of Structure 5D-32-1st in Tikal (Section 6.1, I) (Table 17).

8.2.3. Seated-effigy covers

Seated-effigy covers have been dated to the Late Classic period (Ferree 1972: 118-128) and would have also been used during the Terminal Classic period (Section 6.2, R). The seated-effigy covers selected in my sample of studied materials from Tikal and Uolantun and those mentioned from Uaxactun and Copan were recovered in association with temples composed of terraced pyramidal platforms that supported a building. They were found either on the floors of the temple rooms (suggesting that incense was burnt in ceremonies inside the temple, in one case as part of termination activities before the construction of a new building), intruded in the floors of the temple rooms (also the result of ritual behaviour), as room fill (in a context suggesting their use in termination activities before the construction of a new building), in a burial (suggesting their use in funerary rituals), in the core of the substructure of the temple, and as a sealed deposit of censers beneath a unit (bench) that could have been used as an altar or throne in a temple room. The alignment of the deposit of incensarios in the core of the substructure of temple 5D-5 in Tikal with an important burial placed in bedrock and with the upper room of the temple suggests a concept of centrality in Maya cosmology, and possibly ritual activities associated with an important interred royal. The alignment of the deposit of incensarios with a unit that may have been an altar or a throne in a temple room and possibly with an important burial in Structure 5D-32-1st in Tikal may also suggest that the placement of the incensarios may have involved ritual activities associated with an interred royal. All the contexts mentioned above may be indicative of ritual activities associated with a royal.

With the exception of the covers from Uolantun that can be dated to the Terminal Classic period, given their association with Eznab ceramics, the other seated-effigy covers presented were dated to the Late Classic period. Late Classic seated-effigy covers were found in association with hollow cylindrical stands with flanges and the Jaguar/Sun representation as well as with flanged zoomorphic pedestal-based censers, spiked pedestal-based censers, and spiked hollow cylindrical stands (Section 6.1, I) suggesting that they were used together and therefore contemporaneously in ritual activities during this period (Table 18).

Table 18 In situ associations of seated-effigy covers with other ceramic categories
X Late Classic period • Terminal Classic period ☐ Postclassic period

Censer ID	Ladle censers	Hollow cylindrical stands with flanges and the Jaguar/Sun representation	Tubular cylindrical stands with flanges, a solid base, and the Jaguar/Sun representation	Vases with face effigy	Flanged zoomorphic pedestal-based censers	Spiked pedestal-based censers	Three-pronged supports	Containers with outflared walls	Vessels with high walls and an everted rim	Spiked 'buket' like vessels with outflared walls	Spiked hollow cylindrical stands
N/A Offering PTV-2 Tikal (Section 6.1, H)		X									
12U-82a/16 Tikal (Section 6.1, I)		X			X	X					X
(135A-605/44 and 135A-322/27) and (135A-629/27, 67, 88) and (135A-352/44 and 135A/88)[35] Uolantun (Section 6.2, R)		•									

8.2.4. Flanged zoomorphic pedestal-based censers

Flanged zoomorphic pedestal-based censers were used during the Late Classic period and also likely during the Terminal Classic period. Based on the contexts of the specimens presented in this study flanged zoomorphic pedestal-based censers were used in the main ceremonial/administrative areas of sites as well as in residential areas of sites. Two specimens recovered from contexts dated to the Late Classic period were found in ceremonial structures in core areas of sites. One was found in Stucture 5D-32-1st, located in the North Acropolis of Tikal, which consisted of a high, terraced structure which supported a building. The censer was found in the sealed deposit of incensarios below a unit (bench) in the room of the temple building that may have served the purpose of an altar or a throne. The other specimen was recovered from a surface context in structure IVB located in the Main Plaza of Calakmul (Sections 6.1, I and 7.5.1.3). Structure IVB is the central building of Structure IV, an eastern platform which consisted of an elongated platform with a north-south orientation that supports structure IVB at the centre and two other smaller buildings in each side of the platform. Opposite to this structure is temple VI to the west, thus forming an E group or *Complejo de Conmemoración Astronómica*. In addition, censer 87-24 recovered from a small mound in a residential area of Altar de Sacrificios in a context dated to the Terminal Classic period (Section 6.2, M) suggests the possible use of these vessels in residential as well as ceremonial structures.

The deposit of materials which included a zoomorphic pedestal-based censer in Structure 5D-32-1st at Tikal beneath a bench in a room of the building (Section 6.1, I) suggests a temporal overlap in the use of these vessels during the Late Classic period. It also suggests an associated use of these vessels (at least in this case) with seated-effigy covers, hollow cylindrical stands with flanges and the Jaguar/Sun representation, spiked pedestal-based censers, and spiked hollow cylindrical stands. Censer 87-24 from Altar de Sacrificios found in direct association with a ladle censer in a context dated to the Late Boca phase (A.D. 830-909) or Terminal Classic period (Section 6.2, M) also suggests a temporal overlap in the use of these vessels during the Terminal Classic period (Table 19).

8.2.5. Spiked pedestal-based censers

The spiked pedestal-based censer 12U-85/16 found in situ beneath the bench of Room 3 of Structure 5D-32-1st at Tikal in a context dated to the early Late Classic period (Section 6.1, I), the spiked pedestal-based censer recovered in a burial at Caracol also dated to the Late Classic period and other spiked pedestal-based vessel materials reported from other sites to be Late Classic/Terminal Classic (Section 7.5.1.2.4.1) suggest that it is likely that these vessels were used in some sites of the Maya lowlands from the Late Classic period, an earlier date than the Terminal Classic date that has previously been suggested (Sabloff 1973: 119). Spiked pedestal-based censers appear to have been commonly used during the Terminal Classic period, as well as the Early Postclassic.

The censers were used in both epicentral and outlying areas of archaeological sites, and appear to have commonly been used in association with activities centred on pyramidal and other structures. In pyramidal structures, they have been found on the floors of the buildings (suggesting their use in ritual activities within temples), beneath a bench at the centre rear of the room of a building (suggesting a ritual activity that involved the interment of this and other censers beneath an altar or a throne), and as a sealed cache in the corner between the stair platform and the main body of a pyramidal structure. Spiked pededestal-based censers have also been found in burial contexts (suggesting their use in funerary rituals), in caves, and around stelae.

---

[35] Materials from lots 88 and 44 in Structure SE-486 at Uolantun are considered in association. The seated-effigy covers which contain fragments from these lots, also had other fragments from other lots (i.e. 27 and 67) which had a less secure dating. The dates assigned to the seated-effigy covers are based on lots 88 and 84 located on the floor of the temple rooms.

Table 19 In situ associations of flanged zoomorphic pedestal-based censers with other ceramic categories
X Late Classic period • Terminal Classic period ☐ Postclassic period

Censer ID	Ladle censers	Hollow cylindrical stands with flanges and the Jaguar/Sun representation	Tubular cylindrical stands with flanges, a solid base, and the Jaguar/Sun representation	Vases with face effigy	Spiked pedestal-based censers	Three-pronged supports	Containers with outflared walls	Vessels with high walls and an everted rim	Spiked 'buket' like vessels with outflared walls	Seated-effigy covers	Spiked hollow cylindrical stands	Other
12U-82b/16 Tikal (Section 6.1, I)		X			X					X	X	
87-24 Altar de Sacrificios (Section 6.2, M)	•											

Table 20 In situ associations of spiked pedestal-based censers with other ceramic categories
X Late Classic period • Terminal Classic period ☐ Postclassic period

Censer id	Ladle censers	Hollow cylindrical stands with flanges and the Jaguar/Sun representation	Tubular cylindrical stands with flanges, a solid base, and the Jaguar/Sun representation	Vases with face effigy	Flanged zoomorphic pedestal-based censers	Three-pronged supports	Containers with outflared walls	Vessels with high walls and an everted rim	Spiked 'buket' like vessels with outflared walls	Seated-effigy covers	Spiked hollow cylindrical stands	Other
12U-85/16 Tikal (Section 6.1, I)		X			X					X	X	

As previously mentioned, spiked pedestal-based censers have been recovered in association with hollow cylindrical stands with flanges and the Jaguar/Sun representation suggesting a temporal overlap in the use of these censers during the Late Classic and Terminal Classic periods. Such is the case of the pedestal-based censer recovered from Structure 5D-32-1st beneath a bench in association with two hollow cylindrical stands with flanges and the Jaguar/Sun representation in a context dated to the early Late Classic period, and of the spiked pedestal-based vessel found in association with a hollow cylindrical stand with flanges and the Jaguar/Sun representation together with other ceramic vessels on the floor of Structure 30-1st at Las Ruinas de Arenal. Another spiked pedestal-based vessel was found in a tomb dated to the Late Classic period in an outlying residential group at Caracol together with other vessels, among which was a flanged cylinder with the representation of the Jaguar/Sun (Section 7.5.1.2.4.2). Spiked pedestal-based censers have also been recovered in association with ladle censers in contexts dated to the Terminal Classic and Postclassic periods. Examples of this are Tomb III at Guaytan, where a spiked pedestal-based vessel as well as a ladle censer were recovered among other materials (Smith and Kidder 1943: 135, 144, Fig. 41b) in a probable Postclassic context, and Group IV at the cave of Balankanche near Chichen Itza, where among many spiked pedestal-based censers, were also found ladle censers, all in a context dated to the Terminal Classic period (E.W. Andrews 1970: Figs. 7 and 47b).

8.3. THE USE OF INCENSE BURNERS AND THE LATE CLASSIC TO POSTCLASSIC TRANSITION

As mentioned in Section 2.5, changes in ritual practices associated with the use of incense burners have been proposed during the Terminal Classic period (P.M. Rice 1999; Ringle *et al.* 1998; Sabloff 1973). Sabloff (1973: 108, 119), who advocated foreign invasion in the Maya southern lowlands as having caused the collapse of Maya civilization, has suggested that during the Terminal Classic period at Seibal elaborate flanged cylinders with the sun god heads and their bowls for burning incense were replaced by spiked and ladle incense burners. Similarly, Rice (1999: 40) has suggested that during the Terminal Classic period in the southern Maya lowlands elaborately modelled image censers and censer stands 'abruptly ceased to be used' and ladle censers and spiked hourglass censers were 'adopted'. According to Rice (1999: 25) the use of non-image and spiked censers became widespread in the Maya lowlands, with the 'collapse' of divine kingship and elite power. George Bey III (Ringle *et al.* 1998: 216) has also addressed changes in incense burners during the Epiclassic period and has associated ladle censers, openwork censers and spiked hourglass censers in the northern Maya lowlands with a cult that would have spread in Mesoamerica during the Epiclassic period.

The data presented in this book, however, suggests a temporal overlap between hollow cylindrical stands with flanges and the representation of the Jaguar/Sun and ladle censers. The cylinders were in use during the Late Classic and Terminal Classic periods and some data presented in my analysis suggests an early use of ladle censers during the Late Classic period, and during the Terminal Classic period, ladle censers were commonly used. The suggested temporal overlap conflicts with the idea of a replacement of hollow cylindrical stands with flanges and the Jaguar/Sun representation with ladle censers. If the Late Classic dating of some of the ladle censers presented in this book is correct, ladle censers would have been adopted in the Maya area while hollow cylindrical stands with flanges and the Jaguar/Sun representation were still in use. Unfortunately, the data presented in this study does not contain any clear example of a context in which ladle censers and the cylinders were recovered in association confirming a temporal overlap. However, a possible case may be found in Structure 5D-34 in Tikal. In lots which consisted of fill over the floor level of the room of the building on the high, pyramidal platform are reported censer fragments, some described as ladle bowls and cylinders (Tikal Object Cards). Several of the contexts within the temple were disturbed (W.R. Coe 1990: 465-501) however, and a temporal overlap in the use of these censers is not certain. The reason for the lack of clear examples of a direct association between these two kinds of censers could be because the censers were used in different rituals, or because the pattern, although present, has not yet been clearly identified in the archaeological record.

Burial PTV-2, dated to the early Late Classic period (A.D. 600±50) in Structure 5D-5 and excavated in bedrock along the axis of the temple, contained a ladle censer, suggesting the use of these censers by some elites (perhaps royalty) in funerary rituals during the Late Classic. If members of the elite would have been responsible for this funerary ritual which involved the use of a ladle censer it would seem unlikely that the use of ladle censers would have been adopted as a result of the 'collapse' of Maya kingship and elite power. Unless the ladle censer was placed on top of the burial by non-members of the elite and represented a post mortuary entering of the tomb, the context suggests the use of ladle censers by royalty (or at least some royalty) during the Late Classic period in Tikal. It is possible that the people involved may have had slightly different cultural affiliations (elites may have had varied cultural backgrounds and this case may have involved people who had come from another place). Alternatively, the ritual may have involved local Maya elites who used ladle censers.

The presence of ladle censers dated to the Late Classic and Terminal Classic period suggests a change in ritual practices in the Maya lowlands. Given the temporal overlap suggested by some data presented in this study, ladle censers may represent a form of material culture adopted in the Maya area during the Late Classic period at some sites that was characteristic of other parts of Mesoamerica (as will be discussed below), suggesting movements of people or ideas. How much this change by itself can reflect changes in religious ideas is not clear. It may represent significant change; alternatively, when adopted, the symbolism or meaning associated with ladle censers may have not been in conflict with the local ideology, especially when considering how many aspects of religion different Mesoamerican groups shared. A link between the cessation of the use of hollow cylindrical stands with flanges and the Jaguar/Sun representation and the adoption of ladle censers should not be assumed without question. The apparent cessation of the use of hollow cylindrical stands with flanges and the Jaguar/Sun representation right after or during the Terminal Classic period may very likely be indicative—as Rice (1999: 41-43) has suggested—of changes in the political system that were directly associated with the use of these vessels by elites who were part of the divine kingship ethic. The vessels represented state and/or dynastic rituals and belief systems associated with the sanctity of the king and supernatural patrons of the royal lineage. Changes that seem to have occurred in the political arena by the end of the Terminal Classic period could reflect a weakening of the power of rulers, which would have resulted in changes in some aspects of ritual activities associated with kingship, as Rice suggested it in relation to the cylindrical stands. In contrast to what appears to have happened with cylindrical stands, ladle censers commonly used by elites and non-elites in other parts of Mesoamerica—and possibly during the Late Classic period in the Maya area, would not have been particularly associated with an ideology of divine kingship and would have continued to be used after the decline of political power of rulers by the end of the Classic period.

Seated-effigy covers on which rulers were represented and which were associated with concepts of divine or semi-divine kingship as well as flanged zoomorphic pedestal-based censers that supported some of these covers are not represented in my sample of selected materials and have not—to my knowledge—been identified in the archaeological record for the Postclassic. As seems to be the case with hollow cylinders with flanges and the representation of the Jaguar/Sun, seated-effigy covers would have also ceased to be used in elite ritual activities after political changes that may have resulted in the weakening of the power of rulers and consequently the termination or weakening of Classic period divine or semi-divine kingship ideas during the Terminal Classic period. The same may be the case for the flanged zoomorphic pedestal-based censers.

As previously discussed, some data presented in this study suggests that spiked pedestal-based censers started to be used in at least some sites of the Maya lowlands during the Late Classic period, an earlier date than the one previously suggested (P.M. Rice 1999: 40; Ringle *et al.* 1998: 216; Sabloff 1973: 119) and the vessels continued to be used during the Terminal Classic and Early Postclassic periods. Spiked pedestal-based censers have been recovered in association with hollow cylindrical stands with flanges and the Jaguar/Sun representation in contexts dated to the Late Classic and Terminal Classic periods (Section 7.5.1.2) suggesting a temporal overlap of these vessels. The archaeological contexts dated to the Late Classic period that contained spiked pedestal-based censers with the cylinders suggest the use of these ritual objects together in specific ritual activities. The contextual association of the vessels conflicts with the idea that there may have been a replacement of hollow cylindrical stands with the representation of the Jaguar God of the Underworld by spiked censers. It also conflicts with the idea that the spiked pedestal-based censers would have been used after the collapse of divine kingship. Spiked pedestal-based censers were used in rituals by elite members, possibly royalty, during the Late and Terminal Classic periods as suggested by the deposit of incense burners beneath a bench on Structure 5D-32 at Tikal, and the censers found on the floor of Structure 30-1st at Las Ruinas de Arenal.

As is the case with ladle censers, it is not clear how much the presence of spiked, pedestal-based censers during the Late Classic and Terminal Classic periods reflects ideological/cosmological change. Appliquéd spikes were already present in the Maya lowlands before the Late Classic period (Ferree 1972: 55-57); therefore, they may reflect not a change in ideology or religion but a shift in practice as used in spiked pedestal-based censers.

In sum, based on the contextual information presented in Chapters 6 and 7, ladle censers and spiked pedestal-based censers were used in the Maya area during the Late Classic period by elite members of society, at the same time that hollow cylindrical stands with flanges and the Jaguar/Sun representation were in use. This temporal overlap suggests changes in the censer complex and ritual practices from the Late Classic period, and is in conflict with the idea of replacement. The contexts of recovery of some of these censers in important ceremonial structures that would have been sponsored by the elite (royalty) during these times suggests that spiked pedestal-based censers and ladle censers would not have been 'adopted' with the collapse of kingship but that they were already used by elite members of society who had not dispensed with Classic concepts of kingship before the end of the Classic period. The data presented in this book suggests that changes in the incensario complex in the Maya area were more gradual than previously thought.

8.4. FOREIGN INFLUENCES IN THE USE OF CENSERS IN THE MAYA AREA AND THE LATE CLASSIC TO POSTCLASSIC TRANSITION

As it has been previously discussed, the use of ladle censers in the Maya area has been associated with the introduction of foreign influences of people or ideas. Some evidence of the use of ladle censers and spiked pedestal-based censers in other areas of Mesoamerica prior to the Late Classic period in the central valleys of Oaxaca suggests a non-local origin of these traditions in the Maya area.

In the Oaxaca region, for instance, ladle censers have been reported from the Preclassic period. With reference to the ceramics of Monte Alban, Alfonso Caso has reported examples of ladle censers assigned to the Monte Alban II phase (Caso *et al*. 1967: 248, Figs. 227a-d) dated to the Late Preclassic period (200 A.C.-200 D.C., based on Markens 2008, Table 2.1 which presents a revised chronology of phases in the Valley of Oaxaca). Based on a seriation of materials from 74 tombs or graves from the Oaxaca valley, Robert Markens also indicates the presence of ladle censers from these contexts during the Late Classic (Peche phase (500-600 C.E.) and Xoo phase (600-800 C.E.)), Early Postclassic (Early Liobaa phase (800-1000 C.E.) and Late Liobaa phase (1000-1200 C.E.)) and Late Postclassic period (Chila phase (1200-1521 C.E.)). During the Epiclassic period, ladle censers were not only present in the Oaxaca area, but also in the Basin of Mexico. In the central northern area of the Central Highlands, ladle censers have been reported in association with the Epiclassic Coyotlatelco ceramic style (Fournier *et al*. 2006: 67). In the Valley of Teotihuacan ladle censers are reported among the Coyotlatelco ceramics (López *et al*. 2006: 220, Fig. 11). Ladle censers dated to the Epiclassic have also been reported in sites such as Tula (Sterpone, personal communication 2008), Xochicalco (Hirth y Cyphers 1988: 63-64), Huapalcalco (Gaxiola 1999: 54-55), and Xochitecatl (Serra *et al*. 2004: 148) in the Central Plateau.

Any of the people living in these areas and possibly more than one group of people living in these or other areas could have potentially had an influence on the use of censers in the Maya area during the end of the Classic period. As previously discussed, Mexican influences in the Maya area have been traditionally associated with Toltec and Mixtec groups of people as well as with people from the Gulf Coast area (Sections 2.3 and 2.4). The relation between Toltec Tula in Hidalgo and Chichen Itza in the Maya northern lowlands, however, is still poorly understood, even when considering the latest chronological revisions in both sites (A.P. Andrews *et al*. 2003; Sterpone 2000/2001) and until the uncertainties on the archaeological chronologies of the two sites are resolved, interactions between Toltecs and Maya groups from northern Yucatan will continue to be poorly understood. However, the latest chronological revisions at both sites suggest that Tula and Chichen Itza could have been coeval, suggesting an interaction between Toltec and Maya people at the end of the Classic period. Similarly, more work in the Cholula and the Gulf Coast area which investigates interactions of people between these areas and the Maya area will further contribute to an understanding of changes in Late Classic ritual and religion within a broader Mesoamerican context.

The use of spiked pedestal-based censers also appears to have been a tradition that existed in non-Maya areas prior to the Late Classic period. In an analysis of ceramics from Tlaxcala, for instance, García and Merino (1988: 301, Fig. 11h) assign spiked pedestal-based censers to the Tezoquipan phase (350 A.C. to 100 D.C.).

Both ladle and spiked pedestal-based censers have also been recovered from sites in the highlands of Guatemala. Several specimens are held in the Museo Nacional de Arqueología y Etnología de Guatemala and I am unable to comment on their chronology and distribution since I have not studied them due to time constraints. Two other categories of archaeological materials which may have been used to burn incense present in my sample and which are not very well known in the area covered by this study have also been identified in the Guatemala highlands as well as in other areas of Mesoamerica. They are presented here given that the study of their chronology and distribution could contribute to a better understanding of incense burning practices within a more holistic Mesoamerican context.

8.4.1. Other materials from my sample possibly used to burn incense similar to specimens identified in the Guatemala highlands and other parts of Mesoamerica

Several fragments of what appear to be parts of domed roofs with incised lines in their lower surfaces have been recovered by the Proyecto Atlas Arqueológico de Guatemala (PSPI 528, 455, 215, and 437) at sites such as Sacul 1 and Calzada Mopan (Figure 69a, b). The lower surfaces of these specimens, which have incised lines, often have burning traces. A complete specimen, which in my view represents an object of this category, is held at the Museo Nacional de Arqueología y Etnología de Guatemala and is reported to have been recovered from San Cristóbal Totonicapán (Catalogue number 6252, Figure 70) in the Highlands of Guatemala. The specimen consists of a pedestal with an outcurved base covered by a domed roof that is attached by three straps. The entire lower surface of the cover has incised lines. Similar specimens have also been reported by Muller (1978: 128-129, Figs. 1 and 2) in Cholula. Smith identifies similar objects as 'scored censers' and has reported specimens from excavations in the state of Morelos, Mexico where they appear in Postclassic domestic contexts (M.E. Smith 2002: 101). The function, chronology, and distribution of these objects across Mesoamerica will require a more thorough study.

Another example is a specific kind of censer cover present in my sample that has also been identified in the Guatemala highlands. The specimen from my sample (PSPI 379) which was recovered by the Proyecto Atlas Arqueológico de Guatemala at the site of Calzada Mopan located in the transitional area between the sabanas and the Maya Mountains in southeastern Peten and was tentatively dated to the Terminal Classic period, is similar to covers recovered from Lake Amatitlán in the Guatemala highlands identified as '*Bocones'* (Mata 2001: 534, Fig. 5) (Figure 71a, b). Mata describes these covers as

> [A]nthropomorphic figures with arms to the sides of the bell-shaped cover, often with bracelets. The hands rest on the stomach. They wear a plain necklace, adorned with a kind of tie to the front, from which in some cases a trapezoid element hangs. The face is human, of an adult person, but it is characterized as having a prominent snout, widely open (which is the reason why they were called *Bocones*), in which the jaws can be seen, the most prominent of which is the inferior one, in which teeth can be noted, in some cases there are missing ones, which indicates old age. The nose is pronounced and aquiline, [they have] marked

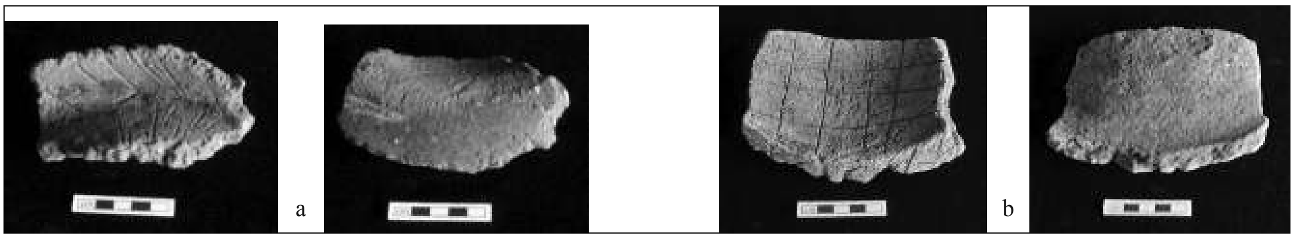


Figure 69 Fragments with incised lines likely from roof covering pedestal recovered by the Proyecto Atlas Arqueológico de Guatemala (a) PSPI 437 (b) PSPI 215

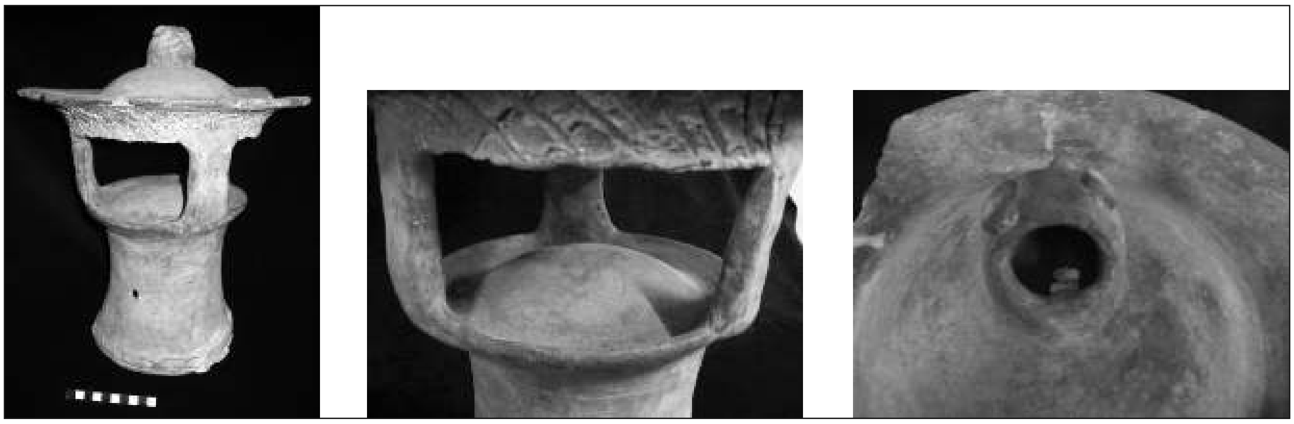


Figure 70 Specimen from San Cristóbal Totonicapán (Catalogue Number 6252) similar to 'lantern censers' (the lower surface of the roof has incised lines) (photos: author, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala)

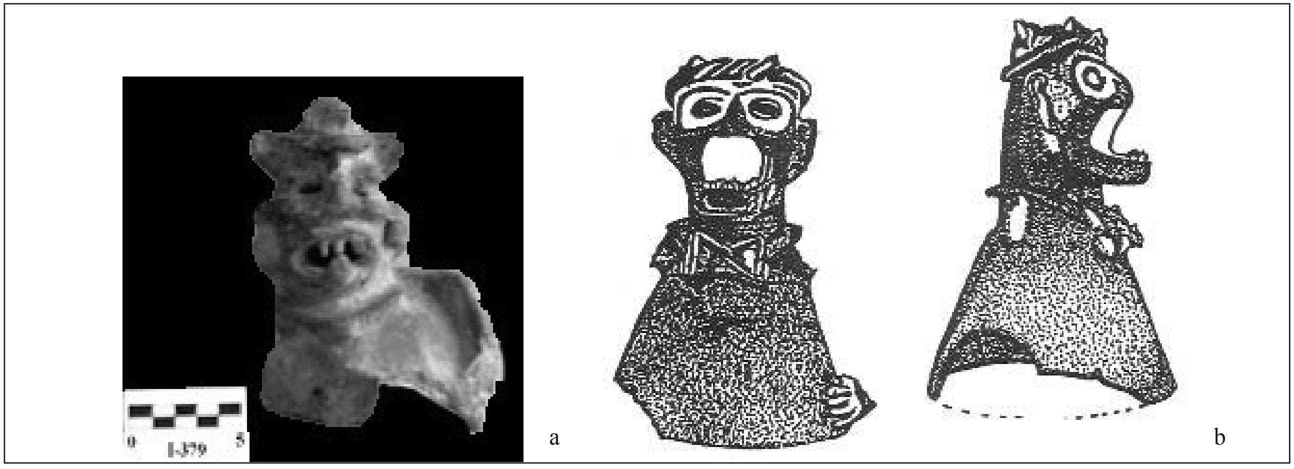


Figure 71 (a) PSPI 379, Calzada Mopan, Proyecto Atlas Arqueológico de Guatemala
(b) bocon covers from Lake Amatitlán (after Mata 2001)

> cheekbones, elongated ears, and open eyes with pronounced eyelids. As a headdress they wear around the head a band that is knotted at the front (…) (Mata 2001: 534, translation mine).

8.5. CONCLUSIONS

The use of ladle and spiked pedestal-based censers in the Maya lowlands may have been part of an old ritual tradition that appears to have been present in some areas of Mesoamerica before it was incorporated into the Maya lowlands likely as early as the Late Classic period in some cases and more clearly during the Terminal Classic period.

The identity of the people who may have had influences in the changes observed in incense burners cannot be known at this time and remains a difficult but challenging task to address in future studies. Also poorly understood is the nature of interaction by which new ideas resulted in changes in the Maya manufacture of censers and ritual practices. What this study suggests is that changes in the '*incensario* complex' were not as abrupt as previously thought during the Terminal Classic period. In fact, the contextual association of spiked pedestal-based vessels and hollow cylindrical stands suggests that these censers were used in combination in some rituals and that spiked pedestal vessels would have been used within the context of local ritual practices for some time, before the cylinders ceased to be used. The same may apply in the case of ladle censers, but this will have to be more clearly established. How much the presence of ladle censers and spiked pedestal-based censers in the Maya area can reflect changes in religious ideas is not clear. Spiked vessels were not new in the Maya area (neither were vessels with pedestals) and the use of spiked pedestal-based vessels might not necessarily reflect an important change in religious ideas and ritual activities. Both spiked pedestal-based censers and ladle censers appear to have been used during the Late Classic period in residential and ceremonial areas and in elite as well as non elite-contexts. The contextual data of these censers suggests that the vessels were not particularly associated with an ideology of divine kingship as it is the case with cylinder stands and seated-effigy covers. The cessation of the use of hollow cylindrical stands with flanges and a Jaguar/Sun representation sometime during the Terminal Classic period, does suggest changes—as Rice has suggested—possibly associated with kingship and the power of rulers. The same appears to have been the case with the seated-effigy covers and perhaps the zoomorphic pedestal-based censers.

9. INCENSE BURNING PATTERNS AND CENSERS

9.1. INTRODUCTION

The aim of this chapter is to present evidence of use of vessels as incense burners based on an experimental study of patterns made by burning modern incense used by the Maya and then to correlate these with patterns from archaeological vessels. I suggest that the use of incense can often be identified by distinctive burning patterns that can be found on vessels. The identification of these patterns can shed light on the function of vessels as incense burners. In some cases, the patterns can also reveal information about the type of incense used, therefore providing a better understanding of specific incense burning ritual practices. This is important, as different incense may have been used for different rituals.

The first part of this chapter involves a presentation of different patterns obtained by the experimental burning of incense. The second part of this chapter involves a general introduction on the use of vessels commonly identified by archaeologists as incense burners, and which were represented in my sample of materials. This is followed by a discussion of the burning patterns present in vessels recorded during fieldwork and a comparison of these patterns with those obtained through experimental work.

The use of complete or semi-complete archaeological specimens from sealed contexts is more effective for the identification of burning patterns than the use of fragments of vessels recovered from surface contexts, which may have been exposed to later non-ritual burning activities. The patterns presented here from archaeological specimens are therefore largely based on complete or semi-complete specimens recovered from sealed contexts such as burials, caches or from the floors of structures, which were sealed by architecture.

9.2. INCENSE BURNING PATTERNS OBTAINED THROUGH EXPERIMENTAL WORK

As it was noted by Triplett (1999: 42, 26) and will be shown in Chapter 10, modern Maya incense includes plant resins, composites of leaves, bark, aromatic wood chips, and resinous wood, all of which can be used independently or combined. The burning patterns made by incense depend on several factors, among which are the kind/s of incense being used, the form of the vessels in which the incense is burned, the wind, and the time allowed for the combustion of the incense burned. In what follows, I present burning patterns obtained from different experiments, some patterns of which can be compared with archaeological patterns in incense burners from my sample. The experiments conducted involved vessels and incense obtained from the market of Santa Elena and were carried out with the assistance of Don Beto Tezukun, who was in charge of taking care of the materials from the bodega of Tikal during my visit.

9.2.1. Burning pattern A

Figures 72 and 73 illustrate a modern and an archaeological example of a pattern left by the dripping of pure resin along the walls of vessels.

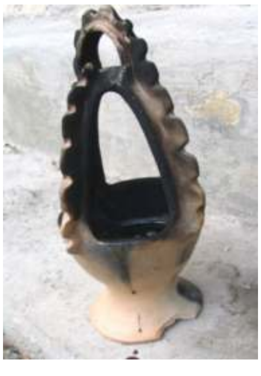


Figure 72 Modern censer obtained in the market of Santa Elena, Peten, showing the marks of burned resin dripping down on the walls of the vessel

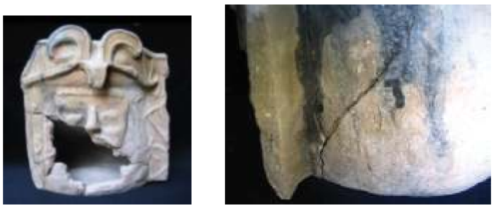


Figure 73 Censer 17.1.1.1385 of unknown provenience stored at the bodega of Tikal, with traces of burned resin that has dripped down the walls of the vessel

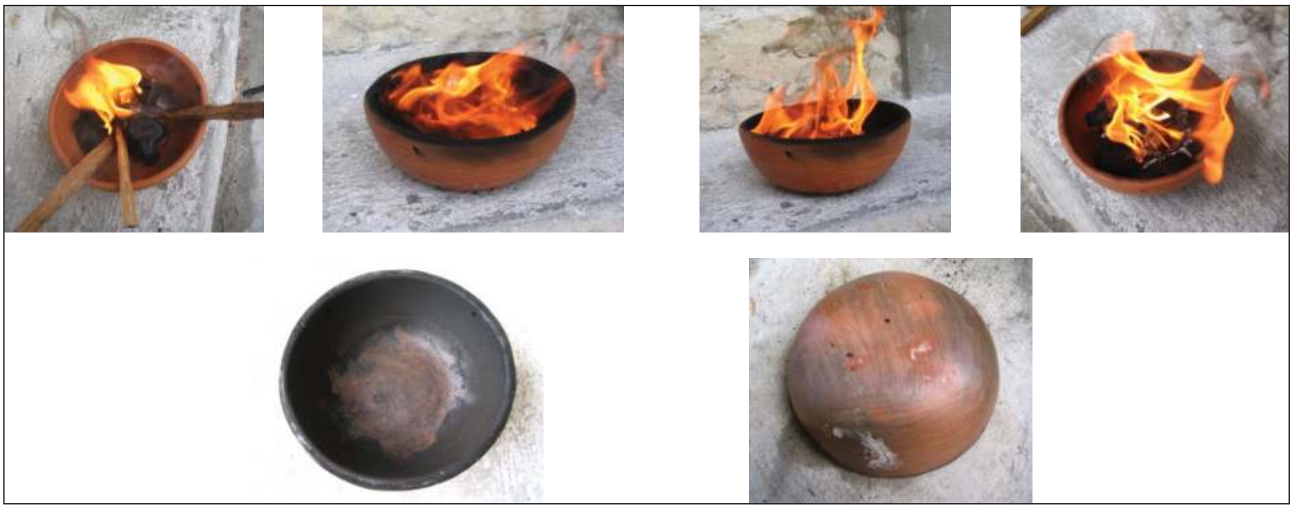


Figure 74 Experiment of incense burning in a modern vessel bought in the market of Santa Elena yielding a pattern of blackened inner walls and a less pronounced circumferential burning area on its inner base

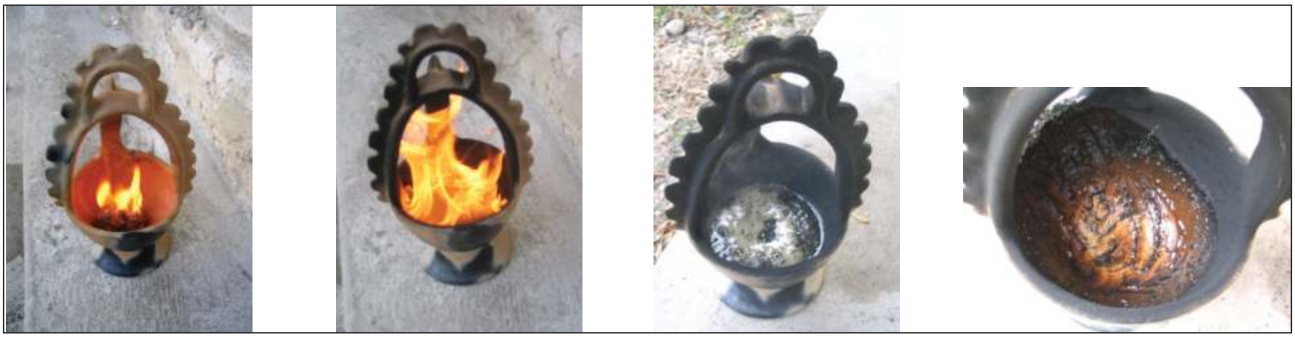


Figure 75 Experiment of incense burning with a modern censer from the market of Santa Elena yielding a pattern of a circumferential unburned area on the inner base of the vessel and burned or blackened inner walls above the upper surface of the resin

The incense burned in the censer from Figure 72 was white copal ignited with *ocote*, a highly resinous wood from pine trees cut in the form of splints. Pure burned resin can be identified by its distinctive shine and by the traces of dripping that it often leaves as it slips along the walls of vessels.

9.2.2. Burning Pattern B

Another common pattern made by resins is one of burned or smudged walls and a circumferential non-burned area on the inner base of vessels (Figure 74). This burning pattern can be obtained by burning white copal—of the kind that is commonly sold as wrapped in leaves (Figure 101c) with little charcoal ignited with *ocote* wood. The ocote wood and the white copal are highly combustible. In this experiment, the materials were allowed to burn until the fire was naturally extinguished and the resin was consumed, producing a pattern of blackened inner walls and a blackened edge on the upper outer wall of the vessel caused by the fire and the smoke constantly moving with the aid of the wind. The inner surface area of the vessel that was less exposed to the fire and smoke appears to have been its base, which remained almost unburned. Even though the outer surface of most of the vessel was not in direct contact with the fire, the surface displayed a pattern of light black stains and some occasional white stains as a result of the intense heat (Figure 74).

This pattern was also obtained by burning white copal ignited with ocote wood in a three-strap censer. In this occasion, the fire was extinguished before the resin was consumed. Removal of the resin before it was dried revealed that the section below the upper surface of the resin was not burned or blackened as the rest of the inner walls of the vessel (Figure 75).

9.2.3. Burning Pattern C

Another pattern made by incense burning consists of black stains on the inner base of a vessel (Figure 76). This pattern was obtained by burning copal balls composed of resin and bark or wood chips that were ignited with ocote wood. In such an experiment, the copal balls were ignited and left to burn until the fire naturally extinguished in a vessel with incurved walls. The balls were not consumed completely and the resulting burning pattern on the inner base of the vessel was one of black stains. The edge of the inner walls of the vessel was also burned and a pattern of circumferential burned lines was made in the inner surface

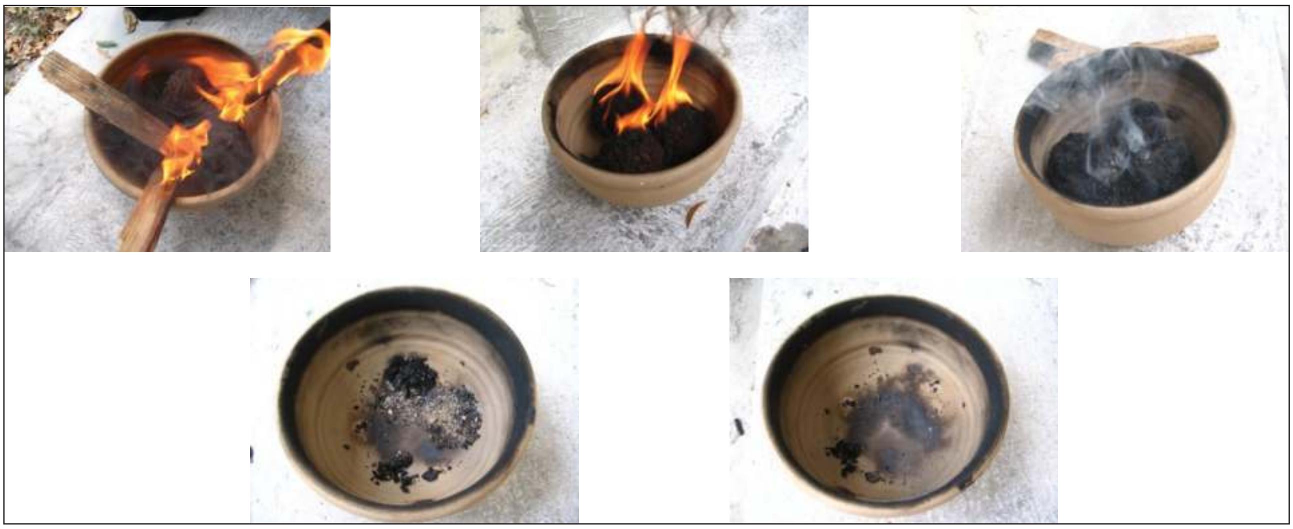


Figure 76 Experiment involving the burning of copal balls with ocote wood in a vessel from the market of Santa Elena yielding a pattern of black stains on the inner base of the vessel, a burned area around the inner edge of the vessel, and black circumferential lines along the inner walls of the vessel

of the walls of the vessel in the form of a spiral. The burning of the inner edge of the vessel is likely to be due to its wall's curvature, which would have allowed for an increased contact of the fire and smoke with this area while the circumferential lines on the inner walls of the vessel could be associated with the vessel's manufacture through coiling and their exposure to fire and smoke during the burning of incense.

9.3. THE USE OF CENSERS BASED ON A STUDY OF THE MATERIALS RECORDED DURING FIELDWORK

9.3.1. Ladle censers

A ladle censer consists of a container with a tubular handle attached to it (Figure 77). The inner surfaces of the containers of the ladle censers from the collections involved in this study do not appear to have residues of resin but of charcoal based on naked-eye observation. Residues of charcoal and burned resins are distinguishable. The most discernible attribute is that resin shines as opposed to charcoal, which is opaque. In addition, and as was previously mentioned, resins often slip along the walls of vessels leaving traces. Resin also adheres to the surfaces of vessels more than charcoal does. Because resin is more combustible than charcoal, residues of resin would ignite more easily than those of charcoal, something that can be tested.

The burning patterns on the inner surfaces of the containers of ladle censers from my sample consist of either black stains on the bases of the vessels or nearly complete burned inner surfaces (Figure 77). Most vessels are not burned on their outer bases suggesting that incense was burned in their inner surfaces[36]. Some vessels do not appear to have burning traces suggesting that they were not used.

Based on the experiments I conducted in Guatemala, the burning patterns of ladle censers described above more closely resemble those that can be obtained by burning charcoal or charcoal and black copal balls which are made of small pieces of bark containing sap. The patterns are different from those that result from burning pure resin collected by incision, referred to as white copal, which consists of burned walls and an unburned inner base (Pattern B)[37].

The use of a ladle censer by Lacandon people to burn incense was reported by Tozzer (1907: Fig. 1) and suggests that Maya ladle censers were used as incense burners in the past, and that archaeologists are correct in calling these vessels 'censers'. A Maya glyph for 'ladle censer' has not yet been identified and a word for ladle censers in Maya languages is not known (P.M. Rice 1999). Ladle censers do not seem to have been represented in any of the three known Maya codices: the Dresden Codex, the Madrid Codex and the Paris Codex.

From Bernardino de Sahagún, a Spanish Franciscan friar who lived in Central Mexico during the sixteenth century, we learn that the word for ladle censers in Nahuatl was *temaitl* (*tletl*, fire; *maitl*, arm) (Sahagún [1590] 1988: 120). From Colonial documents we learn that among the types of incense burned in the *tlemaitl* was copal (Sahagún [1590] 1988: 120), *chapopotli* (Bancroft 1967: 322-323), and *yauhtli* (Sahagún [1590] 1988: 167). The use of these vessels as incense burners is recorded in the iconography of codices from the Central Highlands, where they are commonly depicted with incense inside in the form of pellets and smoke coming out or in the hands of people in

---

[36] However, Elizabeth Graham (personal communication, 2009) notes that some ladle censers from Lamanai had traces of resin underneath (in their outer surfaces) and suggests that these censers may have been used differently.

[37] Different forms of incense may have been burned which were not tried in my experiments. In Motozintla, for instance, cylinders of an approximate rectangular shape made of wood from the 'palo cajete' also called 'palo de corcho' or *jopi* and *bat* in Mochó, are covered by a fine layer of white copal (*saq ti po.m*) to be used as incense, and are placed inside or wrapped with the bark of the 'guineo' (*Musa sapientum L.*, Musaceae). They are called 'pante' (García 1981: 121-124). I have not found this type of incense in the markets I visited.

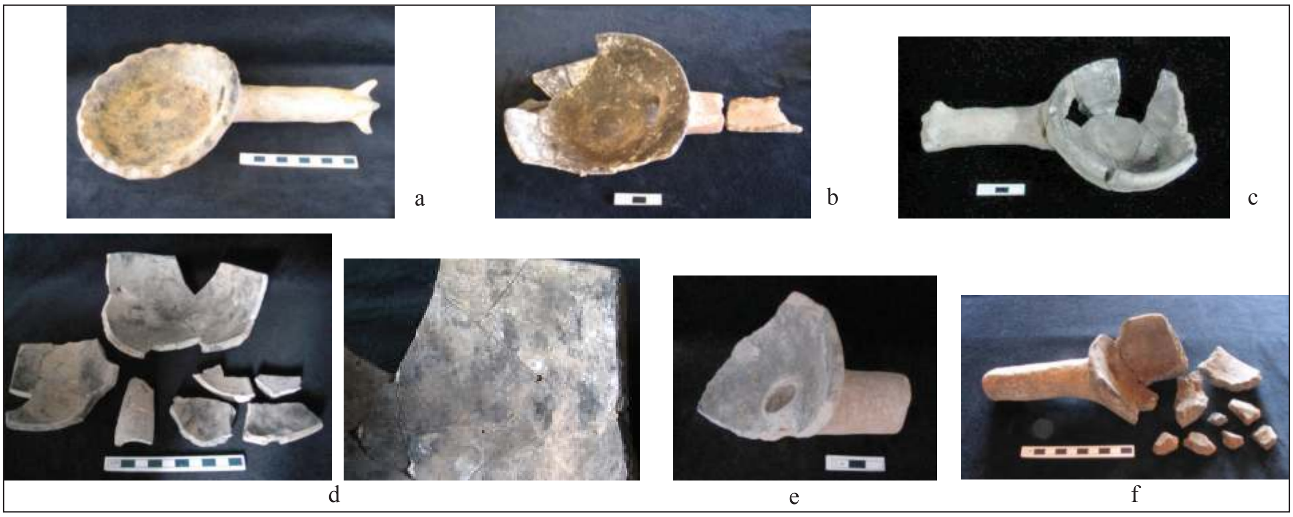


Figure 77 Examples of burning patterns of black stains on the inner surfaces of the containers of ladle censers. The vessels do not appear to have resin residues (a) censer A-324, Ucanal (b) censer PSPI 503, El Reinado (c) censer from Operation 121, lot 568, La Joyanca (d) censer 12H-31/15, 8, 7, Tikal (e) censer 31C-3c/3, Tikal (f) censer PSPI 23, Aktun Ak'Ab

the act of placing incense into them, with smoke coming out of the vessels[38].

Various ethnohistoric records from the Central Highlands identify the use of the *temaitl* as an incense burner. In *Historia Universal de la Nueva España,* Fray Bernardino de Sahagún wrote about the use of the *temaitl* in Central Mexico and noted that the vessels were used to carry lighted coals from the fire and then burn incense in front of 'idols' during rituals. In a reference to the offerings that priests made in temples at certain hours, Sahagún wrote:

> They offered incense in these the *satrapas*, during the night and during the day, at certain hours. They incensed with censers of terra cotta in the form of a kind of skillet of medium size with a hollow handle of the largeness of a *vara* in measure and of the length of the arm up to the elbow or a little more, having within little stones which served as rattles. The censer was ornamented with sculptures that were pierced at intervals from the middle to the base. They took in it lighted coals from the fire and they threw on it copal; they approached the statue of the demon and they incensed also the idol. When this was done they threw the coals on the fire. The same practice was imitated by the people in their houses, morning and evening, before the statues that they had in their chapels or in their courts. The parents taught their children to make the same every morning and evening (Sahagún [1590] 1988: 189, translation mine)[39].

Another reference to the way in which the 'offering of fire' was made can be found in a text from the indigenous informants of Sahagún from Tepepulco located in the Tezcocan region of Mexico, in the book *Ritos, sacerdotes y atavíos de los dioses*. The text contains the illustration of a woman holding a ladle censer in her hand with smoke coming out of a *temaitl*.

> And this is how the offering of fire was made; with a *sahumador* made of clay, with rattles. There they placed the coals, and when they supported them, they placed the copal at once, and they come out before the figure of the deity, or in the centre of the patio where the braziers made of clay are. And when they were before the figure of the deity, then they offered the *sahumador* towards the four directions, as it was smoking. And when they have made the offering to the four directions, then they leaned (the coals) in the braziers. The copal stayed there smoking. And it was made in this way: at dawn they woke up their sons or daughters, their mothers and fathers woke them up. They were woken up so that they offered fire, in a hurry they woke them up, that with this they would not be lazy. This was done in the houses of all the people (Sahagún [1590] 1992: 49, translation mine)[40].

---

[38] Some of these representations occur in the following codices, some Colonial and others believed to be Prehispanic: Códice Borbónico, Códice Aubin, Códice Boturini o Tira de Peregrinación, Códice Mendocino, Códice de Borgia, Códice Bodley, Códice Nuttal, and Códice Selden (Salinas and Castellanos 2004: Figs. 11, 17, 20, 24, 29, 36, 38, 41, 50, 53, 54).

[39] 'Ofrecían incienso en los cués los sátrapas, de noche y de día, a ciertas horas. Incensaban con unos incensarios hechos de barro cocido que tenían, a manera de cazo, de un cazo mediano, con su astil del grosor de una vara de medir o poco menos, largo como un codo o poco más, hueco, y de dentro tenía unas pedrezuelas por sonajas. El vaso era labrado como incensario, con unas labores que agujeraban el mismo vaso desdel medio abaxo. Coxían con él brasas del fugón, y luego echaban copal sobre las brasas, y luego iban delante de la estatua del Demonio y levantaban el incensario hacia las cuatro partes del mundo, como ofreciendo aquel incienso a las cuatro partes del mundo. Y también incensaban a la estatua. Hecho esto tornaban las brasas al fugón. Esto mismo hacían todos los del pueblo en sus casas, una vez a la mañana y otra a la noche, incensando a las estatuas que tenían en sus oratorios o en los patios de sus casas. Y los padres y las madres compelían a sus hijos que hiciesen lo mismo cada mañana y cada noche' (Sahagún [1590] 1988: 189).

[40] 'Y cómo se hacía la ofrenda de fuego: con un sahumador hecho de barro, con sonajas. Allí colocaban brasas, cuando ya las apoyaron, enseguida colocan copal, y vienen a salir ante la figura del dios, o en medio del patio donde están los braseros hechos de barro. Y cuando venían a estar ante la figura del dios, entonces hacia los cuatro rumbos (del universo) ofrecían el sahumador, con lo cual va éste humeando. Y cuando hacia los cuatro rumbos hicieron su ofrenda, entonces colocan (las brasas) en los braseros. Allí queda humeando el copal. Y en esta forma se hacía: de madrugadita despertaban a los hijos, varones, o mujeres; los despertaban sus madres y

The two documents suggest that ladle censers carried lighted coals on which incense was burned during rituals in temples, shrines, courts, and in the houses of people. After the 'statue', 'idol', or 'figure' of the deity was incensed, people threw the coals contained in the ladle censers on the fire or braziers.

The *temaitl* represented in the Central Mexican codices is similar to vessels found in archaeological contexts in Central Mexcio which have been called 'frying pans' and consist of a bowl with flared walls and a tubular handle attached to it. These vessels are reported in the Basin of Mexico in Late Formative complexes (Ticoman, approximately 500-250 B.C.) (Cobean 1990: 41, Fig. 3) and they have also been reported in Tula, Hidalgo, Mexico in later times (Figure 78).

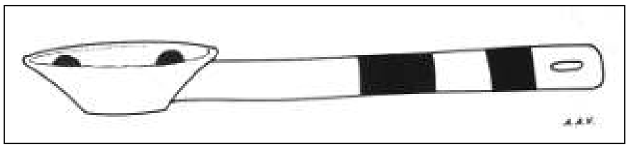


Figure 78 Red on Brown (*Rojo sobre café, sin nombre formal*). Tollan phase (circa A.D. 900/950-1200) (after Cobean 1990, Fig. 211D). Note that the chronology of the Tollan phase has recently been revised (Sterpone 2000/2001)

Cobean suggests that 'frying pan' vessels were possibly used in religious rituals to burn incense and although he mentions the presence of burned residues on the inner surfaces of the vessels, he does not mention the presence of burned resins, specifically (Cobean 1990: 259, 461). In a similar manner, the Aztec ladle censers of the type *Tezcoco Compuesto* analyzed by the ceramist Patricia Fournier were smudged (*ahumados*) and no resins were identified on them (Patricia Fournier 2007, personal communication). A ladle censer from the Monte Alban area in the Oaxaca region is reported to have contained copal attached to a fragment of ocote dated to the Monte Alban III phase, approximately A.D. 300-750. The censer was exhibited in the Oaxaca section at the Museo Nacional de Antropología in November 2003 (as cited by Salinas and Castellanos 2004: 77). The censer would constitute archaeological evidence of the use of these vessels as incense burners.

The burning patterns on the ladle censers from Guatemala appear to be similar to those reported by Cobean and Fournier on vessels from Central Mexico. The patterns are also in line with the information recorded in colonial documents about the use of lighted wood within these vessels. The lack of identified incense residues in the archaeological specimens mentioned above may suggest that incense was burned in small amounts together with lighted wood, and also that the kind of incense that was burned may not have been in the form of pure resin, which has a distinctive shine, adheres to surfaces and is more easily recognized. Instead, it may have been incense containing both sap and bark or wood, or another kind, such as *yauhtli*, whose use in the *temaitl* has been recorded in Central Mexico (Sahagún [1590] 1988: 167). The Lacandon use of a ladle censer to burn incense as reported by Tozzer (1907) suggests that Maya ladle censers would also have been used as incense burners.

9.3.2. Hollow and tubular cylindrical stands with flanges and a central modelled effigy representation

Hollow cylinders with flanges and modelled effigy representations (including human, supernatural, or a combination of both) constitute the bases of composite censers on top of which vessels were placed for burning incense. In 1944, Smith suggested that flanged incense burners could have served as 'removable chimneys for burners or possibly, like pot stands, to support an incense receptacle'. His interpretation was based on the open bases of the cylinders that would have made them 'unfit to hold a change of incense' (Smith 1944: 41 as cited in Rands and Rands 1959: 229). Years later, in reference to the flanged cylinders of Palenque, Robert and Barbara Rands (1959: 229), after considering Borhegyi's work on composite three-pronged incense burners, suggested that 'it would have been quite possible to rest a small vessel or disc for burning incense on the top of the Palenque decorated cylinders'. The suggestion was also made that the rims of some of these censers would have been 'ideally suited' for supporting a receptacle or cover. The direct association between flanged cylinders and ceramic vessels was later confirmed by archaeological data. An example of this association can be found at Santa Rita Corozal, where two Early Classic effigy ceramic stands with unslipped ceramic plates resting on top were found within a niche in structure 7-3rd (D.Z. Chase 1988: 93; D.Z. Chase and A.F. Chase 1998: Fig. 1).

Another example of this association are the Terminal Preclassic or Early Classic censers excavated at Cerros in Structure 4B-1st, a pyramidal structure with a masonry vaulted building on its summit. The censers were found below the collapsed vault of the building lying on a bench located at the northern end of the building's chamber. Inside the bench, a cache consisting of a polychrome basal-flange bowl containing three jade fragments was found. Several censer stands were found on the bench in association with censer dishes, and the analysis of the context of the materials revealed that the censer dishes were laying on top of the censer stands before the vault collapsed. A shallow bowl is reported to have had evidence of burned incense inside and to have contained an unburned area marked by a copal ball, which would have once sat on the interior base of the vessel. Also found on the bench were copal balls, jade and shell fragments as well as a Botan Unslipped bucket-like vessel (Walker 1998: 89-95).

In the Temples of the Cross and the Sun at Palenque, various flanged cylinders were buried together with ceramic vessels of conical shapes. These vessels were sometimes located inside the cylinders and in some cases contained burned residues of resin (Cuevas 2004: 81; Figs. 17, 26-28). Such is the case of the elements 5/92, 11/98, and 2/97, assigned by Cuevas to the Cascadas (A.C. 500-600), Otolum (A.C. 600-700), and Murciélagos (A.C. 700-770) Complexes, respectively (Cuevas 2004, Cuadro).

---

padres. Para que ofrecieran fuego, de prisa los despertaban, con esto no se harán perezosos. Esto se hacía en la casa de toda la gente' (Sahagún [1590] 1992: 49).

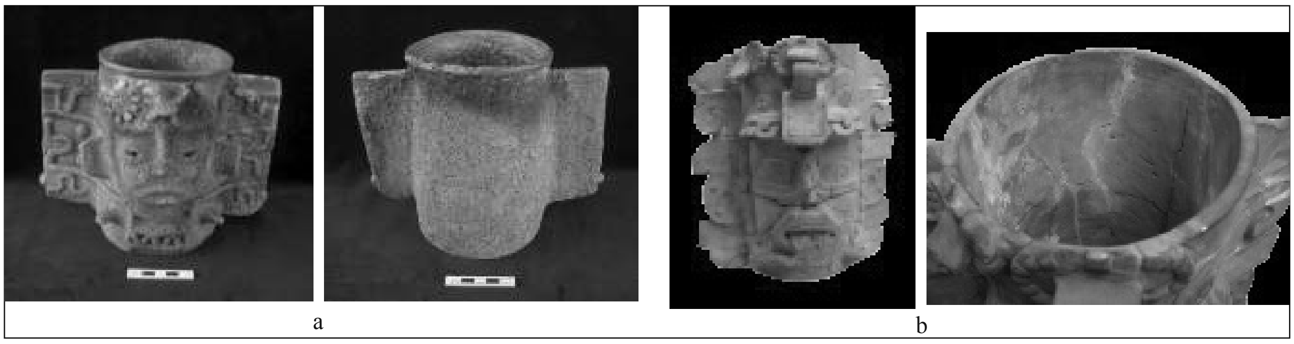


Figure 79 Hollow cylindrical censer stands with an effigy representation with burning traces on the upper edge of the cylinders (a) A314, Simones, Proyecto Atlas Arqueológico de Guatemala (b) NA 11235, Chama, University of Pennsylvania Museum of Archaeology and Ethnology (photo: author, with permission of the University of Pennsylvania Museum of Archaeology and Anthropology)

Two cylindrical stands from my sample, one from the site of Simones recovered by the Proyecto Atlas Arqueológico de Guatemala and another one recovered by Rourkitt during the 1920s at the site of Chama located in the northern Guatemala highlands (Figures 79a, b) show evidence of burning on the upper edge of the cylinders, suggesting the use of these kinds of cylinders as stands on which vessels for burning incense would have been placed.

In addition, other traces could be identified that also reflect the use of these cylinders. A hollow cylindrical censer stand with flanges from Uolantun (135A-608/44 and 135A-587/67, Figure 80; and more completely illustrated by Ferree 1972: Fig. 18b) has evidence of burned substances in the back of the mouth of its effigy mask. The stand can be dated to the Terminal Classic period based on stratigraphy and ceramics (Section 6.2, R).

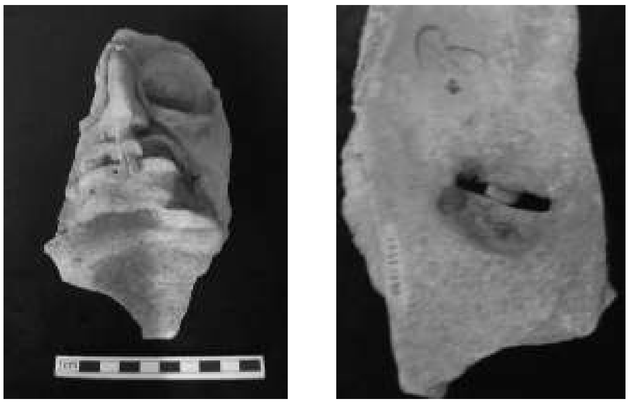


Figure 80 Effigy mask 135A-608/44 and 135A-587/44 of a hollow cylindrical censer stand with flanges and a central modelled effigy representation with burned residues on the back of its mouth

The practice of feeding effigies of censers during rituals has been recorded in modern times (Boremanse 1999: 248; McGee 1990: 44). The Lacandon are known to have fed censer images through the lips of the effigy with balche, *nahuah* (tamales filled with beans or meat), *säk ha*? (*atole*, a cooked corn gruel), and *Käkäoh* (a liquid chocolate drink made from *cacao*). The food is put on the lower lips of the mouths of the images (McGee 1990: 44, Table 5.3). Fray Diego de Landa also suggested the feeding of effigies during Colonial times. In a passage from the *Relación de las cosas de Yucatán* we can read that on a festival celebrated by hunters during the month of *Zac* the face of a 'god' to which they burned incense was sometimes anointed with the blood of the heart of animals.

> They made them (these feasts) on account of the blood which they had spilled during their hunts; for they considered as an abomination any bloodshed unless it was in their sacrifices. And on this account whenever they went hunting, they invoked the god and burned their incense to him, and, if they could, they anointed his face with the blood of the heart of whatever game they had killed (Landa 1941: 162)[41].

9.3.3. Tubular cylindrical stands with flanges, a solid base, and the Jaguar/Sun representation (very likely to have been used as incense burners)

The stands which fall into this category (Figures 81 and 58a) and that were recorded in this study do not show clear evidence of burning. Given their similarity to the hollow and tubular cylindrical stands with flanges and a central modelled effigy representation, it is likely that these vessels were also associated with the burning of incense.

9.3.4. Vases with face effigy (possibly used as incense burners)

The vessels presented in this category consist of vases with a modelled representation of a human or jaguar face (Figure 82). Two nearly complete vases with a human face representation in the sample dated to the Late Classic period (A.D. 600-830) show clear evidence of burning inside (Figure 82a, b). The vessels were excavated at Aguateca by the Proyecto Aguateca. Censer 310050 (Figure 82b) has burned interior walls and an unburned inner base, a common pattern that results from the burning of pure resin (Pattern B). Censer 310385 however, has a

---

[41] '(…) y las hacían (también) por la sangre que derramaban en la caza, porque tenían por cosa horrenda cualquier derramamiento de sangre si no era en sus sacrificios, y por esta causa siempre que iban de caza invocaban al demonio y le quemaban incienso; y si podían, le untaban el rostro con la sangre del corazón de la tal caza' (Landa [1590] 1978: 74, 75).

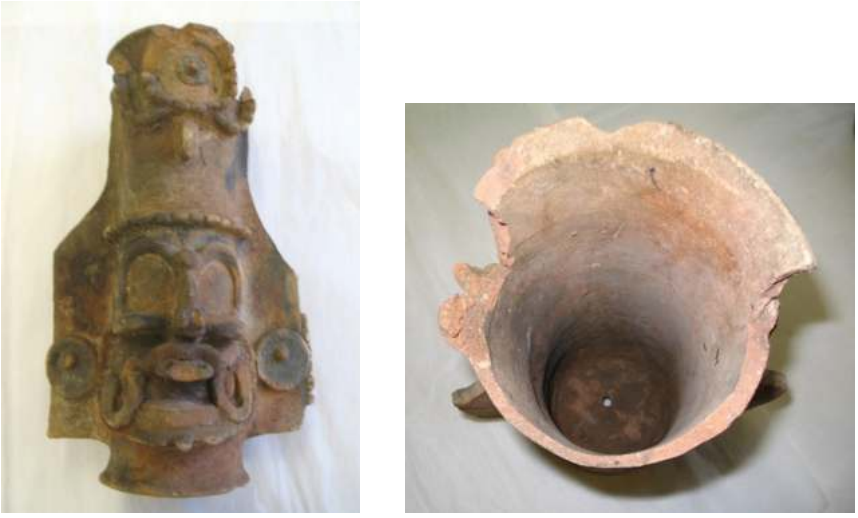


Figure 81 Censer Am1997, Q855 (photos: author, with permission of the British Museum)

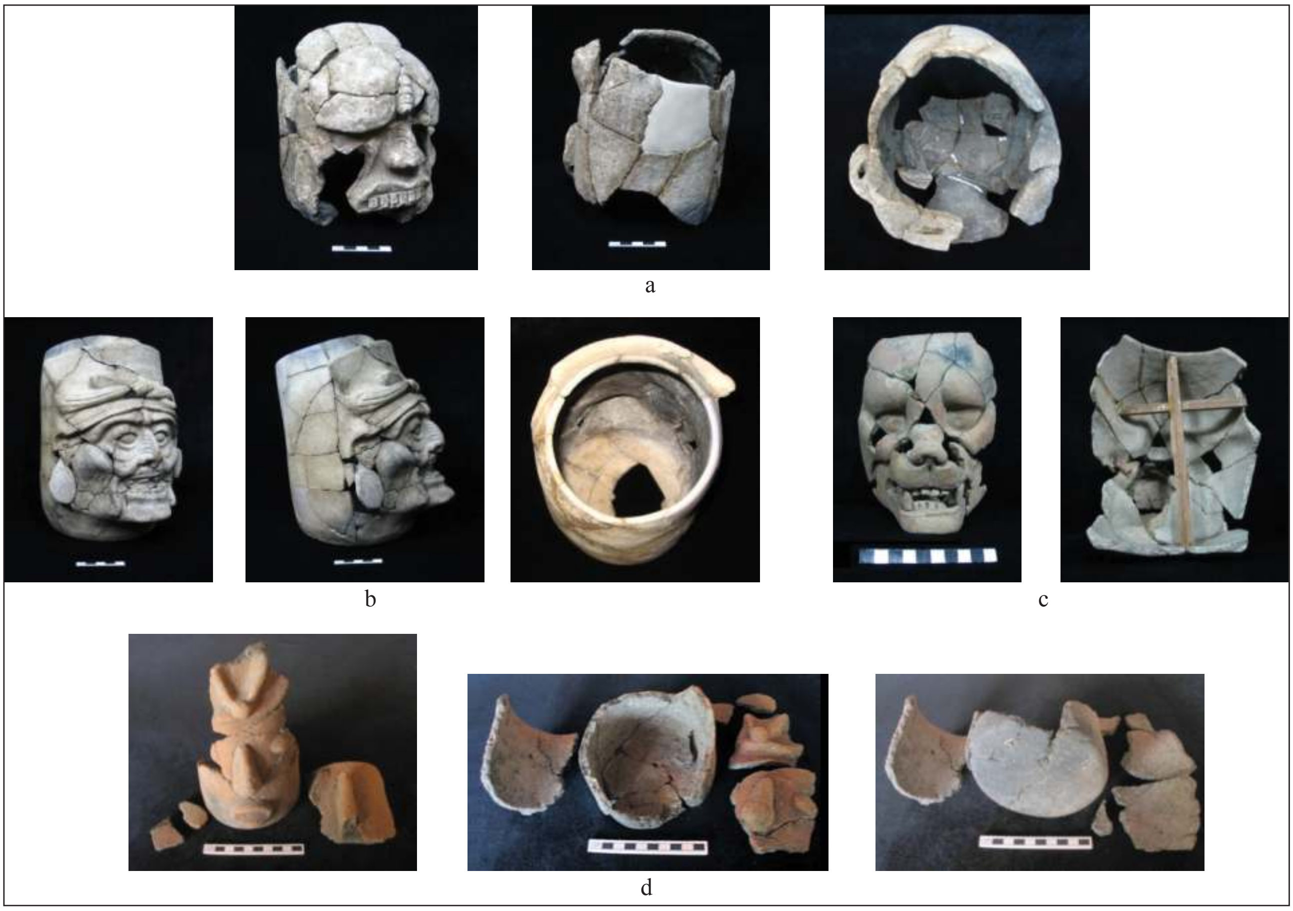


Figure 82 (a) vessel 310385 from Aguateca, Proyecto Aguateca (b) vessel 310050 from Aguateca, Proyecto Aguateca (c) vessel 77-1 from Altar de Sacrificios, excavated by Harvard University (photos a, b, and c: author, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala) (d) vessel PSPI 432 from Ix Ek', Proyecto Atlas Arqueológico de Guatemala

burned inner base and burned inner walls suggesting that if incense was burned, it was not pure resin. An incomplete third vase 77-1 excavated at Altar de Sacrificios, similar in size and shape to the ones from Aguateca but with the representation of a jaguar instead of a human face, may also have some traces of burning inside, based on the difference in colour between its outer and inner surfaces (the inner surface being slightly darker than the outer one) (Figure 82c). A burning pattern in this vessel cannot be identified given that most of its base is missing. The vessel was also dated to the Late Classic period. A fourth vessel with a human face representation which shows clear evidence of burning inside (PSPI 432) was excavated at the site of Ix Ek' by the Proyecto Atlas Arqueológico de Guatemala. The vessel has a burned inner base and is burned in its inner walls and was assigned an Early Classic date (Figure 82d).

Not all vases with a human face representation, however, have burning traces, as is the case with some of these vases in the ceramic collection of the Atlas Arqueológico de Guatemala. At the site of Caracol, over fifty 'face caches' have been excavated by the Caracol Archaeological Project (A.F. Chase, personal communication 2006). The 'face caches' which are described as 'urns with human faces' (D.Z. Chase and A.F. Chase 1998: 311) are commonly found with lids and are reported not to have burned inner surfaces at this site. They are therefore not considered incense burners (A.F. Chase, personal communication 2006).

One of the vessels with a human face representation from the Atlas Arqueológico de Guatemala collection (A318, Figure 83a) excavated at Maringa 2 in the upper basin of the Chiquibul River, Municipality of Melchor de Mencos, is very similar to a vessel found at the site of Caracol (Figure 83b). Neither the vessel from Maringa 2 nor the one from Caracol show traces of burning inside.

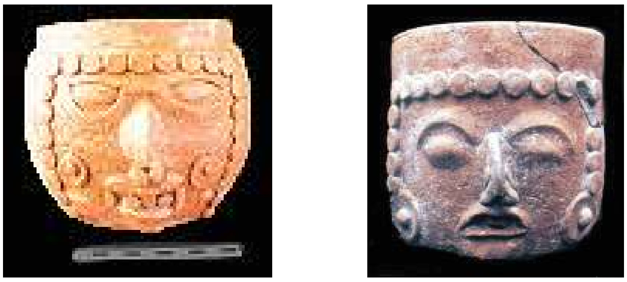


Figure 83 (a) vessel A 318 from Maringa 2, Proyecto Atlas Arqueológico de Guatemala (b) vessel from Caracol, Caracol Archaeological Project (after A.F. Chase and D.Z. Chase 1996a: 72)

The vessel from Maringa 2 would originally have been lidded, based on the form of its upper rim that contains a ledge for a cover to rest; this might have been the case with the vessel from Caracol, given its similarity to the vessel from Maringa 2. It is likely that these kinds of lidded vases with a human face representation were not used as incense burners.

Interestingly, the vases with a modelled human or jaguar face representation with burned inner surfaces described in this section have proportionally higher and less rounded and incurved walls than the lidded vessel from Maringa 2 and many of the 'face caches' from Caracol whose illustrations I have seen in publications. A more thorough analysis of the burning patterns and the shape of vases with a face representation should be conducted in the future, as it is possible that the function of these vessels may be established by the presence or absence of burning patterns as well as on the basis of differences in their form, the presence or absence of lids and the presence or absence of content material.

9.3.5. Pedestal-based censers

Archaeological evidence in the form of resinous residues as well as burning patterns suggests that several kinds of pedestal-based vessels (decorated and plain) were used as incense burners in pre-Hispanic times. Iconographic representations of pedestal-based vessels in ceremonial contexts are also numerous, although their association with incense is not always clear. A tenoned disk from Chichen Itza dated to the Terminal Classic period has the representation of a plain pedestal-based vessel, with flames coming out, in a ceremonial context (Peabody Museum of Harvard University, photo of drawing made by John O'Neill, catalogue number 58-34-20/33685). Representations of pedestal-based censers can also be found on vases such as the polychrome vase Kerr n 8075 (Kerr 2000: 1015) in which an effigy pedestal-based censer is illustrated. Spiked pedestal-based vessels are particularly well documented as incense burners in representations where they are associated with incense. A bench detail from Structure 9N-82 from the site of Copan depicts a person depositing a glyph for *pom* into a spiked incense burner with an hourglass shape (Looper 2003: Fig. 1.18) suggesting the use of the vessel as an incense burner. Representations of the use of spiked pedestal-based containers as incense burners can also be found in the Madrid Codex, the Paris Codex, and the Dresden Codex where they are often represented in association with resin balls and/or scrolls of smoke coming out of the vessels[42]. Spiked pedestal-based vessels continued to be used in Colonial times as evidenced by a vessel from Coxoh (Lee 1979). Pedestal-based vessels of different kinds have continued to be used in modern times (Reina and Hill 1978, Fig. 37e; R.H. Thompson 1958: Figs. 32, 33c, f; Tozzer 1907) (Figure 84).

The burning patterns on pedestal-based vessels from the collections in my sample vary. The patterns and the presence of resinous residues inside some of the specimens suggest the use of at least some of these vessels as incense burners.

Four Historic Lacandon pedestal-based censers, several Postclassic pedestal-based censers from Topoxte and a censer from La Joyanca of unknown date represented in my sample have on their inner surfaces an unburned circumferential area on the base of the vessel and burned walls (Figures 85a-d), a pattern previously described as Pattern B.

Other Postclassic pedestal-based censers represented in the sample have black circular lines on their inner surfaces (Figure 86) a pattern that could relate to the lines I obtained in a vessel through experimental work illustrated in Figure 76. This pattern was identified in pedestal-based censers from the sites of Topoxte (e.g. Figures 86a, b) as well as on a fragment of the effigy of a pedestal-based censer

---

[42] More recently, however, the use of spiked pedestal-based vessels as an offering container for flowers has been recorded among the Tojolabal Maya of Chiapas by members of the Coxoh Ethnoarchaeological Project. The vessels are used in churches and at least in one case on the altar of a house (Deal 1982: 615-617).

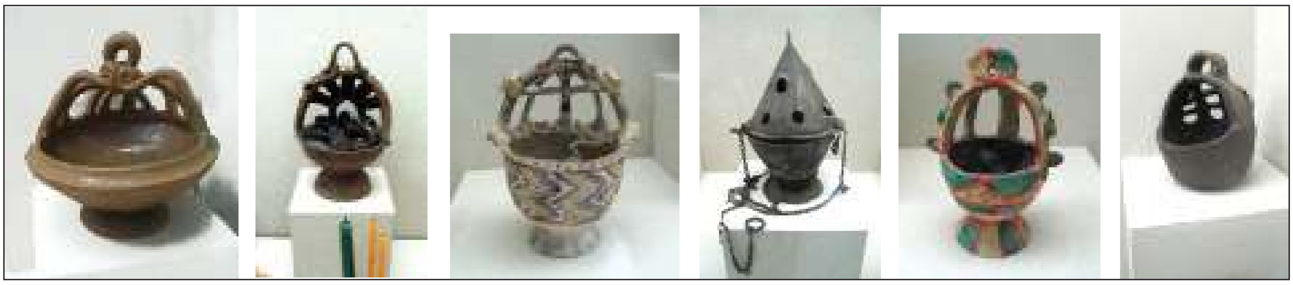


Figure 84 Modern Maya incense burners exhibited in the Museo Nacional de Arqueología y Etnología de Guatemala (photos: author, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala)

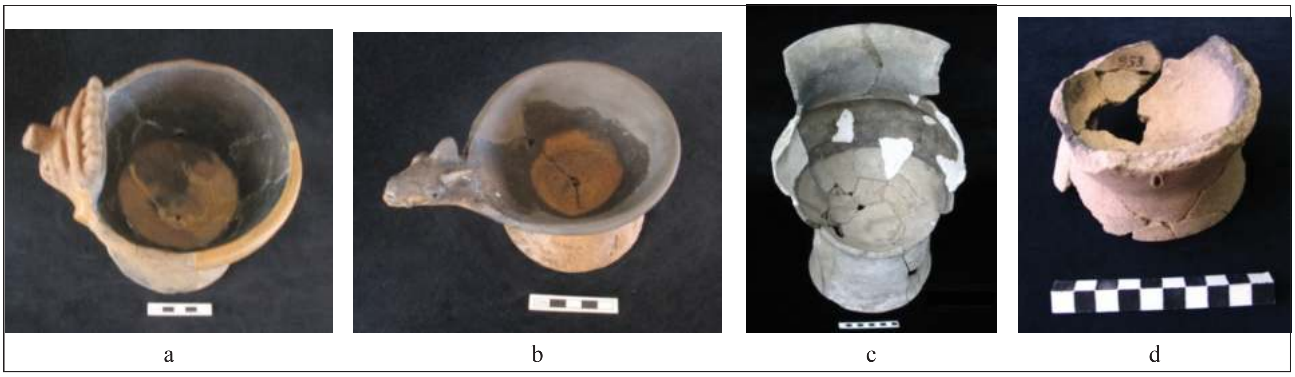


Figure 85 Pedestal-based censers with burning pattern B (a) Lacandon incense burner A-322 from the Xaan area assigned to the Historic period, Proyecto Atlas Arqueológico de Guatemala (b) Lacandon incense burner A 321 from the Xaan area assigned to the Historic period, Proyecto Atlas Arqueológico de Guatemala (c) incense burner TPMC-81 from Topoxte dated to the Middle Postclassic period, Proyecto Triángulo Yaxhá-Nakum-Naranjo (d) pedestal-based censer 553 from La Joyanca, unknown date, Proyecto Petén-Noroccidente La Joyanca

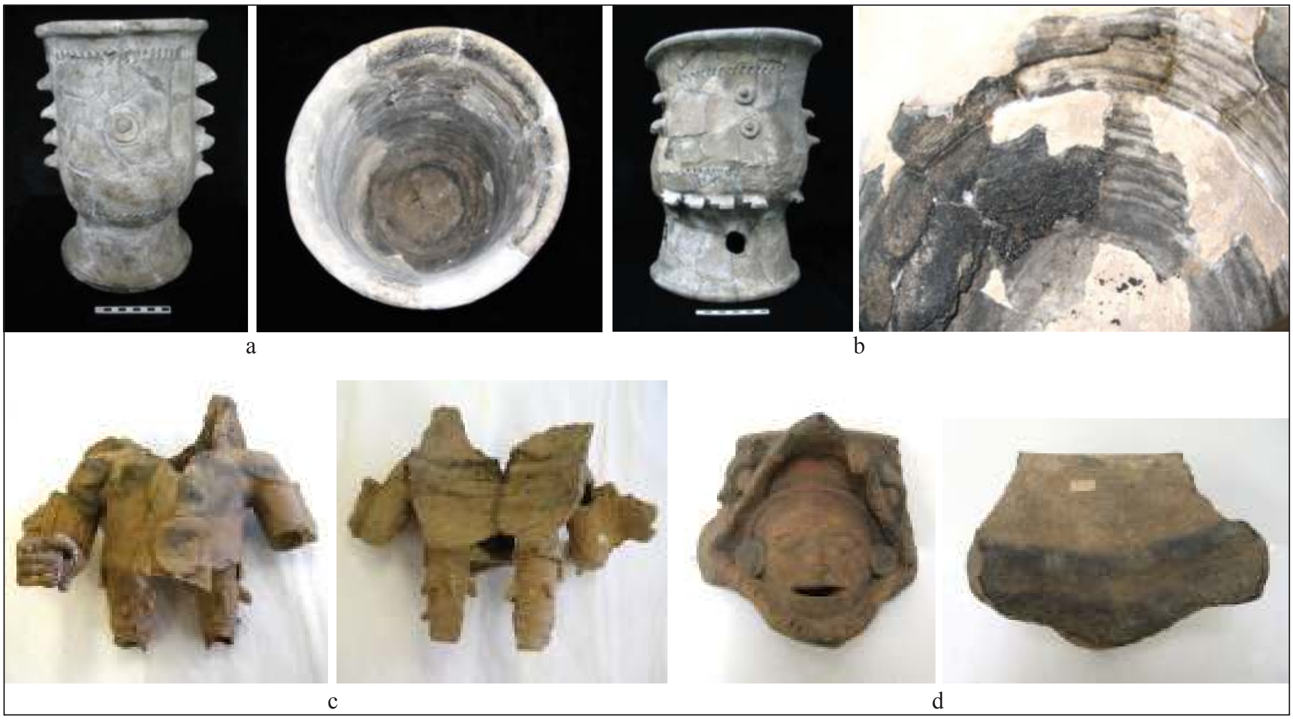


Figure 86 Postclassic pedestal-based censers and censer fragments with a pattern of circular lines on their inner walls (a) censer TPMC-076 from Topoxte, Proyecto Yaxhá-Nakum-Naranjo (b) censer TPMC-073 from Topoxte, Proyecto Yaxhá-Nakum-Naranjo (c) censer Am1997, Q.937, unknown provenience, British Museum (photo: author, with permission of the British Museum) (d) censer 11445, University of Pennsylvania Museum of Archaeology and Ethnology (photo: author, with permission of the University of Pennsylvania Museum of Archaeology and Anthropology)

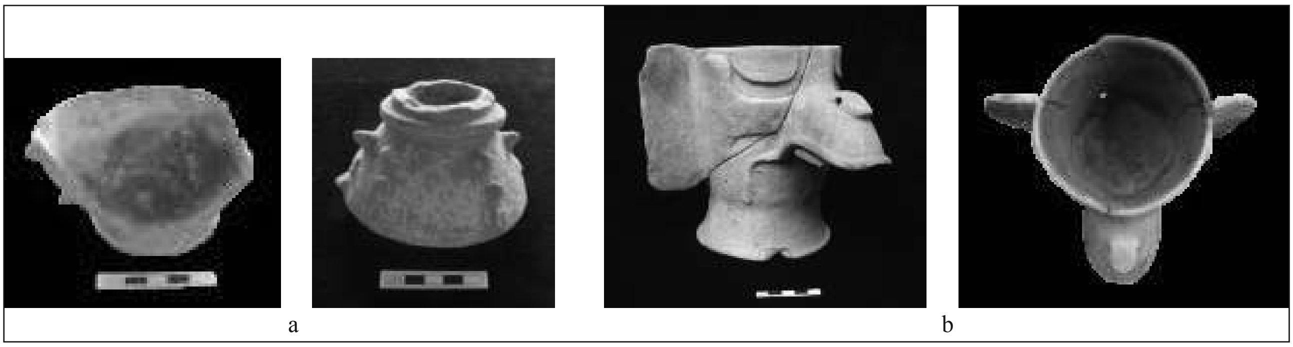


Figure 87 Censers with black burning traces in their inner bases and walls (a) censer PSPI 296 from Group 119, Calzada Mopan, Proyecto Atlas Arqueológico de Guatemala (b) censer 87-24 from Altar de Sacrificios excavated by Harvard University (photos: author, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala)

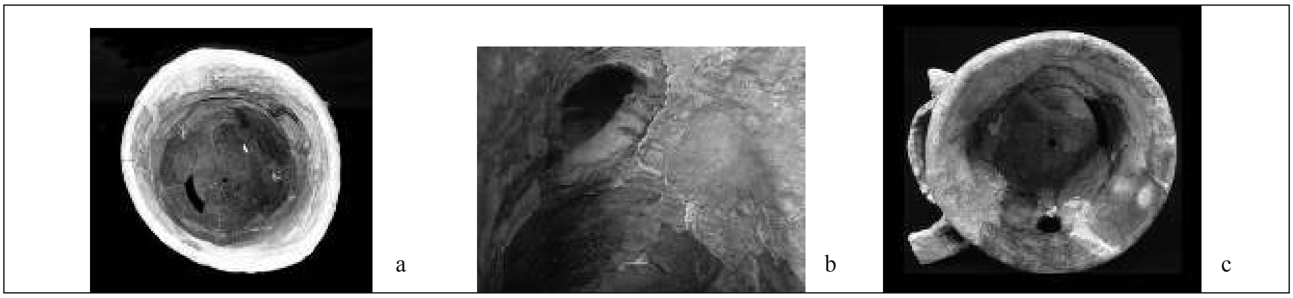


Figure 88 Censer PTMC-079 (a and b) inner surface of container (c) inner surface of pedestal base

held at The British Museum (Figure 86c) and on an effigy pedestal-based censer catalogued as 11445 held at the Pennsylvania's Museum of Archaeology and Anthropology (Figure 86d). In addition to the circular lines, some of the censers from Topoxte also had black resin adhering to the inner surface of the walls of the vessel and an unburned base (Figure 86b).

Other pedestal-based censers represented in my sample are burned on their bases and on parts of their inner walls (Figure 87). This pattern is clear on a small spiked pedestal-based censer from Group 119 at Calzada Mopan dated to the Terminal Classic period (PSPI 296, Figure 87a) and on a pedestal-based zoomorphic censer (87-24, Figure 87b) from Altar de Sacrificios assigned to the Late Classic period.

Sixteen complete or nearly complete pedestal-based vessels from the recorded collections have a hole at the centre of the vessel's base. Some of the holes appear to have been made after the vessels were fired, as it is clearly the case with at least three Lacandon censers (A319, A321, and A322) held by the Proyecto Atlas Arqueológico de Guatemala, two of which are illustrated in Figures 85a, b.

The contention that the holes were made after the vessel's manufacture is based on the unevenness of their edges and evidence of flaking around the hole on the surface as suggested by David Pendergast (personal communication, 2009), and common cracks aligned with the holes on the base of the vessels all of which may have occurred as a result of the pressure used when the hole was made.

The three Lacandon censers mentioned above have a pattern of an unburned circumferential area at their base, suggesting the burning of resin. The question arises as to when the perforation of these vessels was made, after or before the use of the censers to burn incense, what the purpose of the holes was, and how the holes might have affected the function of the vessels as incense burners if they were present before the censers were used. If the holes were made before resin was burned, the resin in a liquid state, due to the combustion process, would have slipped through the holes at the base of the censers. If this was the case, evidence of resin that has slipped through the walls of the inner surfaces of the pedestal bases might be present. This is not the case with any of the three Lacandon censers mentioned above, something that would support the idea that the holes in these vessels were made after the censers were used.

Three pedestal-based censers from Topoxte (TPMC-079, TPMC-082, and TPMC-083) excavated by the Proyecto Yaxhá-Nakum-Naranjo in Structure E-2 in the Main Plaza of the site and dated to the Middle Postclassic period have holes in the centre of their bases that were made before the vessels were fired. This is evident by the evenness and roundness of the holes' edges and the absence of cracks aligned with them. Censers TPMC-082 and TPMC-083 do not have a blackened inner surface or resin residues inside or in the inner surface of their pedestal bases, suggesting that they may not have been used to burn resins in large amounts. Censer TPMC-079 (Figure 90), on the other hand, has a burning pattern in its inner surface of circumferential lines, and contains residues of black resin

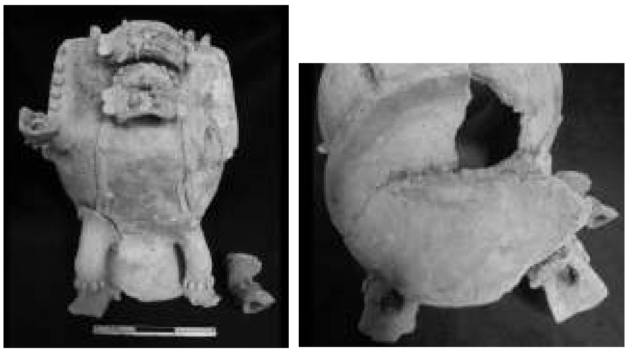


Figure 89 Censer 17.1.1.1434 of unknown provenience held at the bodega of Tikal with missing base section adjacent to the vessel's round perforation

inside (Figure 88a, b). In this case, evidence of black resin was also found on the inner surface of the pedestal base of the censer (Figure 88c), suggesting that the resin may have slipped through the hole during combustion, something that would suggest the use of the vessel after the hole was made.

A common pattern in several censers and vessels categorized as possible incense burners in my sample is a missing part in the base of the vessels adjacent to the hole (e.g. Figure 89), or in the central area of the base of the vessels (e.g. Figure 93). The absence of these parts is noteworthy and may be the result of the base's breakage during the process of making the hole or afterwards. That several of the missing parts at the centre base of vessels are missing from the specimens in the collections also indicates the possibility that the sherds from these sections may have been deliberately kept by the Maya.

9.3.5.1 The practice of feeding censer images

The effigy of a pedestal-based censer dated to the Middle Postclassic recovered from Structure E-2 at the site of Topoxte (TPMC-079, Figure 90) contains burned residue on the lower lip of its mouth. This example and the previous example of the censer effigy mask from Uolantun that contained burned residues at the back of its mouth (Figure 80) suggest the practice of feeding censer images in rituals during Terminal Classic and Postclassic times. The evidence suggests that the Lacandon practice of feeding censer effigies recorded in modern times (Tozzer 1907) is rooted in a very old tradition.

9.3.6. Three-pronged supports (possibly used as incense burners)

The pronged supports observed in the sample of studied materials are composed of a pedestal with a vertical to slightly out-flaring wall, the top of which consists of an out-flaring base with three prongs which in most cases has clear evidence of burning (Figure 91). The use of three-pronged supports to burn incense is not clear. The specimens have in the past been identified as 'chile-mashers' or 'pestles' (J.E.S. Thompson 1939: 153-154) or as incense burners, especially after they were identified by Boregyi as ritual or ceremonial objects used to burn incense (Boregyi 1959).

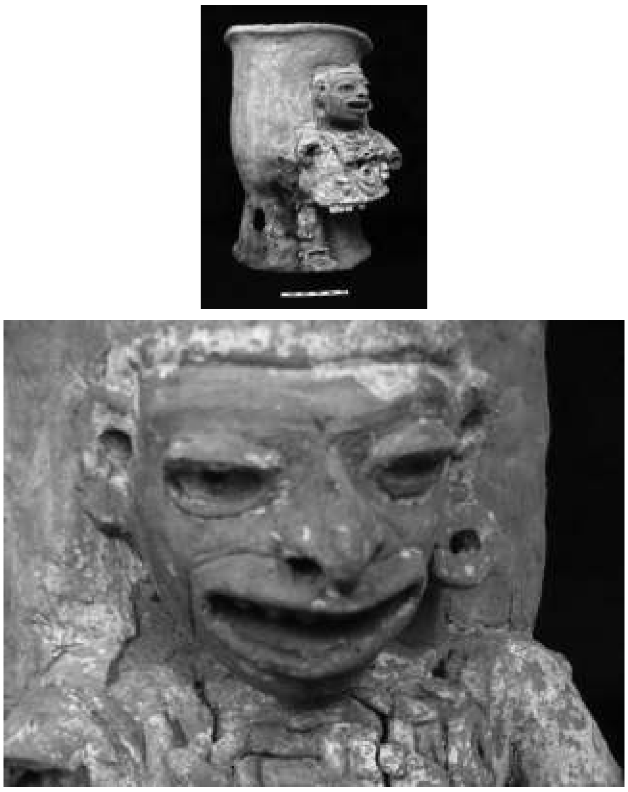


Figure 90 Pedestal-based censer with a human standing effigy (TPMC-079) from Topoxte with burned residues on the lower lip of its mouth

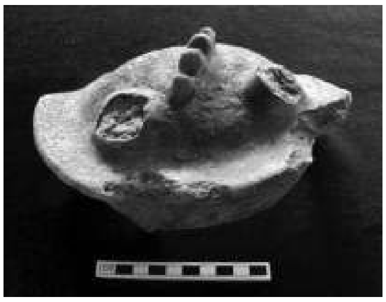


Figure 91 Three-pronged support PSPI 297, Proyecto Atlas Arqueológico de Guatemala

The use of three-pronged stands to burn incense in modern times has been reported by Strucker (1963: 63-64). The stands are reported to have been made in Chamula by the Zinacantecos. According to the author, 'the pom (mixed resin and chips) is burned directly upon the flat upper part [of the vessel] while the censer is clenched by its stem and rotated a specified number of times when incensing an object' (Strucker 1963: 14).

A different kind of support with three small prongs and the representation of an effigy mask on its walls is used in the Maya highlands today in households both to heat food and to burn incense. Modern specimens of this kind of vessel were sold in the market of La Antigua in a stand that specialized in selling incense burners and candleholders of various kinds. Continuity in the form and function of these vessels from pre-Hispanic specimens is possible, but

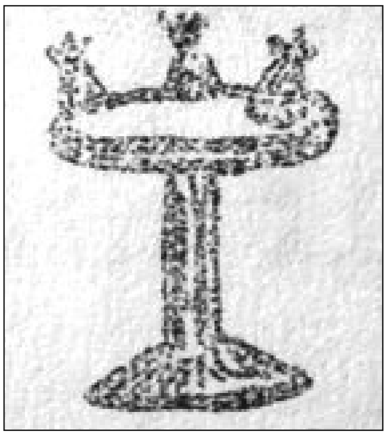


Figure 92 Three-pronged support used to burn incense (after Strucker 1963: 13)

not certain. None of the three-pronged support materials recorded in this study show residues of burned resin or other clear evidence of resin burning[43].

9.3.7. Spiked bucket-shaped vessels with flared walls (with burned inner surfaces)

The vessels in this category are spiked containers with flared walls in the form of a bucket (Figure 93). The use of spiked bucket-shaped vessels as incense burners is not clear. Deal (1982: 626) has suggested that these vessels are likely not to have been used to burn incense. A spiked bucket-like vessel is represented on a mural at Bonampak in Chiapas, Mexico in the context of a bloodletting sacrifice (Grube 2001: Plate 379), suggesting that at least one of the uses of these vessels during the Late Classic period was as containers of blood offerings.

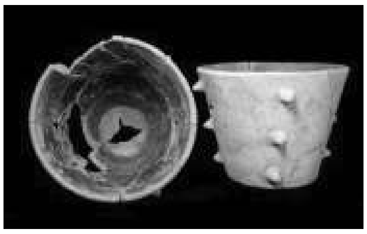


Figure 93 Vessels PN 41D-16-2 421A and PN 41D-16-2 421B, Piedras Negras, Proyecto Piedras Negras (photo: René Muñoz)

Three complete or nearly complete spiked bucket-shaped vessels dated to the Late Classic period are present in my sample and were recovered from primary contexts at the sites of Piedras Negras and El Reinado. The two vessels from Piedras Negras (Figure 93) have blackened inner walls and bases and unburned outer walls and bases. The vessel from El Reinado does not have burning traces on its inner surface and may have some black burning stains on its outer surface. None of the three vessels seems to have traces of burned resin and their patterns suggest that something other than pure resin, such as wood was burned in them.

9.3.8. Seated-effigy covers

Seated-effigy covers are lids with a seated male figure that were placed on top of pedestal-based censers (Fash 1991: 107-109; Fasquelle and Fash 1989: 480-486; Ferree 1972: 119). The smudged inner surface of the seated-effigy cover 12K-131/15, (Figure 94) from Tikal provides evidence of the use of these effigies as censer covers.

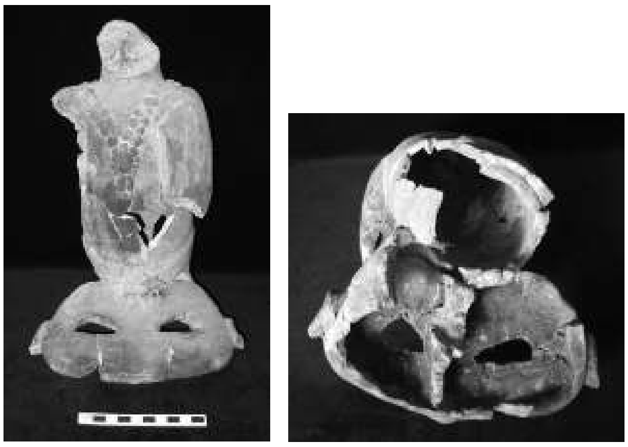


Figure 94 Seated-effigy cover 12K-131/15 excavated by the Tikal Project

Two effigy cover fragments from Uolantun (Figures 95a, b) contained burned residues of textiles. In one case the traces are located on the outer surface of the body of the effigy, in the other case the traces are located on the inner surface of the upper section of a headdress mask. The presence of burned textiles suggests that at least some of these effigy covers would have been dressed.

9.3.9. Containers with outflared walls (possibly used as incense burners)

The vessels included in this category are containers with outflared walls from my sample which may be plain or decorated with elements such as spikes and perforations of different shapes on the walls of the vessels, and whose inner surfaces are burned. Containers with outflared walls are known to have been used to burn incense on the basis of iconography in various forms of Maya art. Based on this and on the contexts of recovery, the vessels in my sample are likely to have been used in rituals. As mentioned in the section on Hollow and tubular cylindrical censer stands with flanges and a central modelled effigy representation, some of the vessels which fall under this category were placed on top of cylinders and used to burn incense. The vessels, however, may have also been used independently as incense burners, given that they do not always appear in contextual association with cylindrical stands. That some of the vessels presented here would have been used

---

[43] Two of the three specimens that were selected for the distributional analysis in this study (PSPI 442 and 443), have prongs affixed to the base of the vessel and were recovered in the main structure of Group 1 at Calzada Mopan from a circular pyramidal structure located at the top of a hill. The type and location of the structure suggests it was a religious building. The information about the location where the third selected specimen was found is not specific.

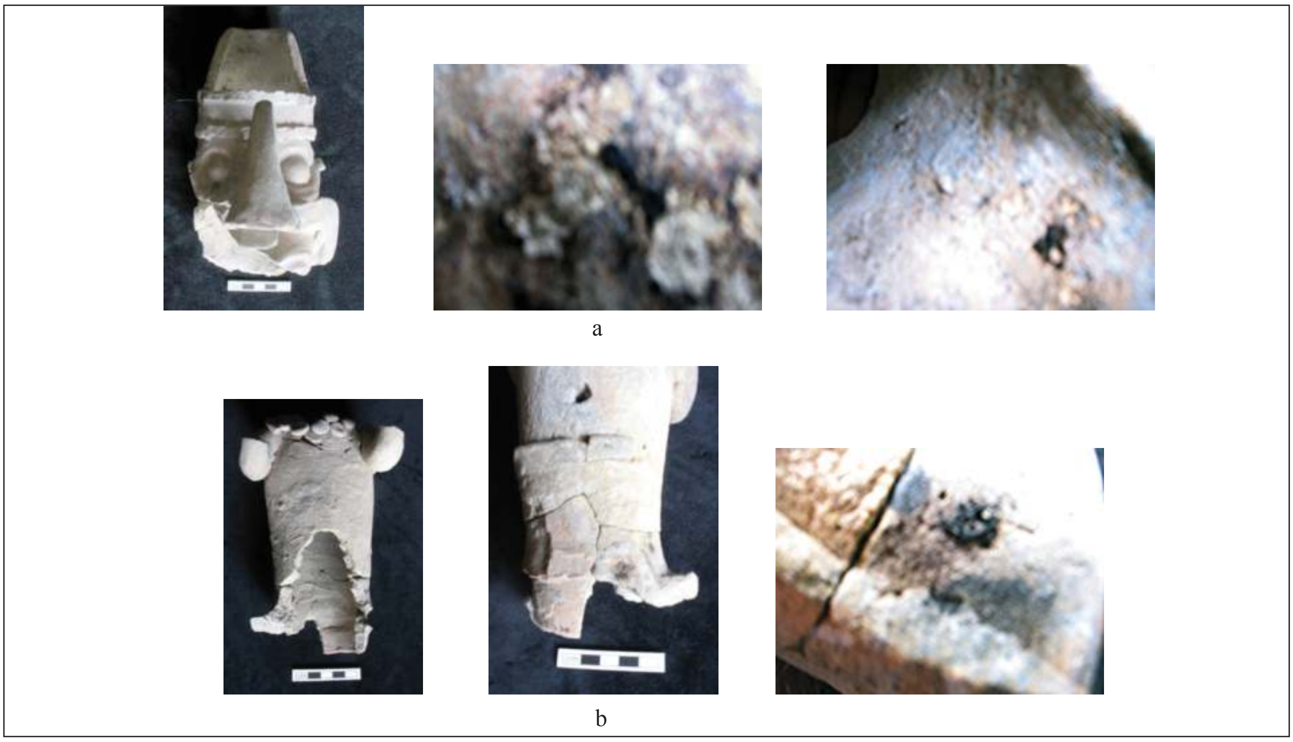


Figure 95 Seated-effigy cover fragments from Uolantun with burned textile traces adhered to their surfaces (a) effigy headdress recorded by Ferree as 135A-560/24 (-328) but 135A/44 and 3; 135A-661/88 PD193; 135A-662/27; 135A-662/95 PD202 as written on the headdress's fragments (b) seated-effigy cover fragment 135A-605/44; 135A-322/27

to burn substances other than or in addition to incense is also possible.

Among the complete, nearly complete or semi-complete containers with flared walls with the characteristics mentioned above from the sample of recorded materials, two burning patterns can be distinguished: one of blackened inner surfaces in the base and walls of the vessel (Figures 96 a-d and 97b) and another one of an unburned circumferential area on the inner base of the vessel and burned inner walls (Figures 96e and 97a). While the latter is suggestive of the burning of resins, the first one is less certain.

9.3.10. Vessels with high walls and an everted rim (possibly used as braziers)

Several vessels identified in the sample of recorded materials in this study and others reported elsewhere have burning evidence on the interiors; they were also found in ritual contexts, sometimes in association with incense burners. A vessel with high walls and a long everted rim excavated in Tikal's Temple V (5D-5-25-9A, Figure 98a) was recovered *in situ* in the context of a burial (PTV-2). The vessel had burning evidence on its interior surface and a ladle censer inside. It is reported to have had dark brown stains in its inner and outer surfaces in an irregular pattern, and its interior base, which seemed to have burning traces, contained minute fragments of charcoal. The burning pattern and the presence of charcoal together with the ladle censer found inside suggests the possible use of the vessel as a brazier. The vessel may have been used to put the coals with copal from the ladle censer after the ladle censer was used, in a similar way that it is described in early Colonial documents by Sahagún ([1590] 1992: 49) (see Section 9.3.1.).

Another vessel from my sample that would fall into this category (12C-599, Figure 98b) has burning evidence on the interior and may have been used for a similar purpose. Sherds of this vessel were found in the fill to the floor level of the room of the building of Structure 5D-34 in Tikal and in its backdirt down the face of the Structure. The lots where the sherds of this vessel were found also contained censer fragments, some described as ladle bowls and cylinders (Tikal Object cards). A third vessel with high walls and an everted rim with burning evidence in the vessel's interior (A 313, Figure 98c) was recovered in a cache (*escondite*) at the foot of the stairway of Structure 3, a high, terraced platform with a central building and two lateral shrines on top at the site of Ixtonton 2. The cache (*escondite*) was composed of vessel A313 and another vessel with high, outflared walls and triangular perforations on the upper section of its walls (Juan Pedro Laporte, personal communication 2006) that contained evidence of resin having dripped through its walls (Figure 28a).

Interestingly, a similar container with an everted rim was recovered at Lamanai in cache N10-17/8, and was reported to have contained 'evidence of use as a censer' (David Pendergast, personal communication 2007) (Figure 99a). The vessel was recovered in association with another vessel (Figure 99b) (Pendergast, personal communication

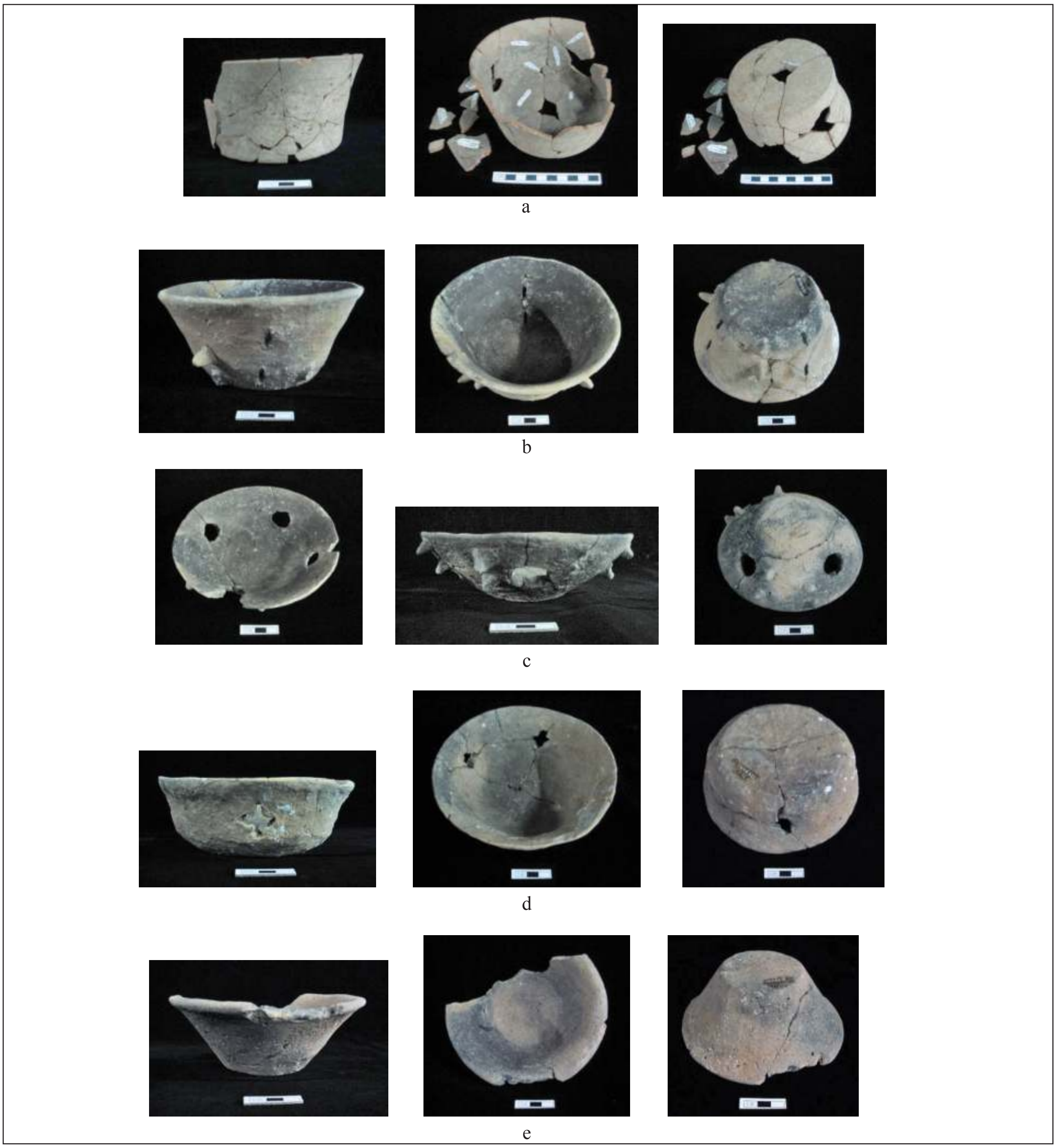


Figure 96 (a) vessel PN-24A-4-4, Piedras Negras, Proyecto Piedras Negras (photo: author, with permission of the Museo Nacional de Arqueología y Etnología de Guatemala) (b) Element 2712-1, 2, 3, 4, La Joyanca, Proyecto Petén-Noroccidente La Joyanca

2007) whose use, based on its form, may have also been related to the burning of incense.

9.4. CONCLUSION

Several patterns can be associated with the burning of incense. Based on the incense burning patterns obtained through experimental work on modern vessels, the types of patterns relate to factors such as the kind of incense used, the form of the vessels in which the incense is burned, the wind, and the time which is allowed for the combustion of incense.

A common pattern that appears to be associated with the burning of pure resin is that of burned or smudged walls and a circumferential unburned area on the inner base of vessels. The burning of copal balls, which contain bark or wood chips with resin, produces a different pattern that can be identified by black stains in the inner surfaces of vessels. Another pattern that was produced consists of circumferential burned lines made on the inner surface

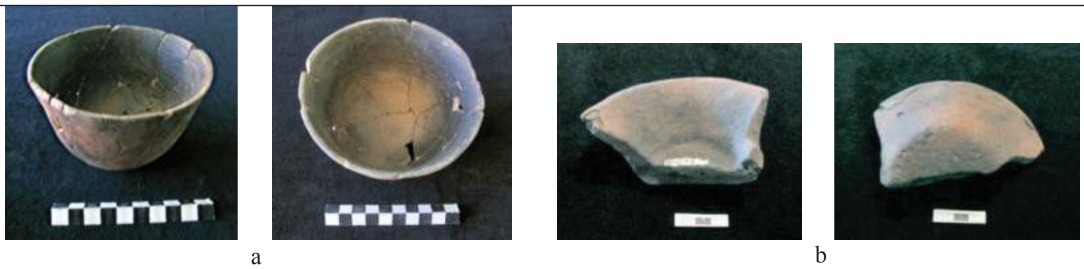


Figure 97 (a) vessel 306882, Aguateca, Proyecto Arqueológico Regional Petexbatun
(b) vessel 614960 Dos Pilas, Proyecto Arqueológico Regional Petexbatun

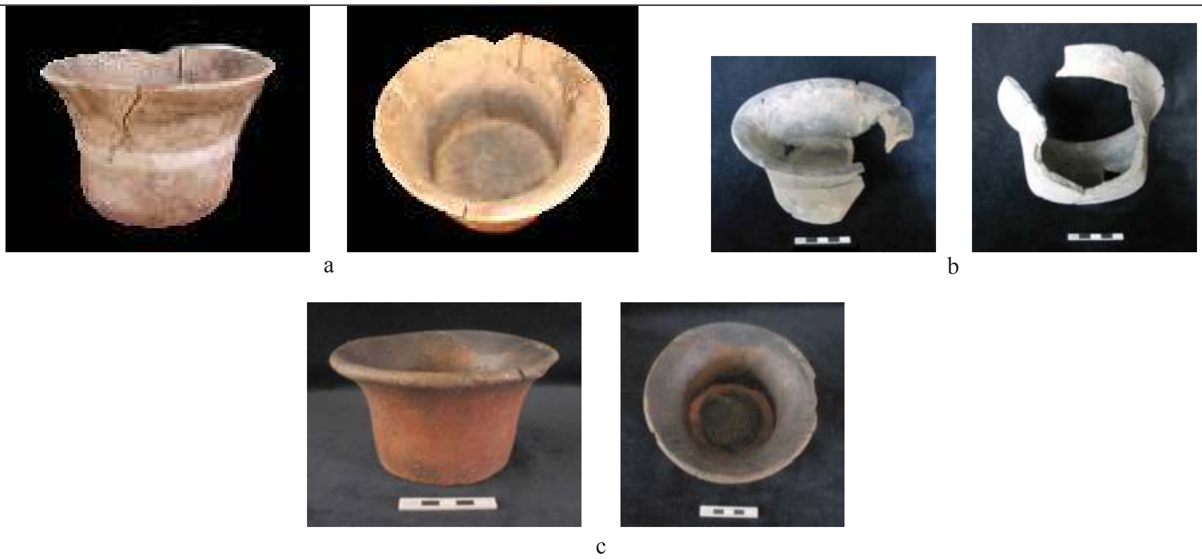


Figure 98 (a) vessel 5D-5-25-9A from Burial PTV-2 in Structure 5D-5 (Temple V), Tikal, Proyecto Templo V
(b) vessel 12C-599 from the interior room and backdirt down the face of Structure 5D-34, Tikal, Tikal Project
(c) vessel A 313 from Escondite 18, Ixtonton, Proyecto Atlas Arqueológico de Guatemala

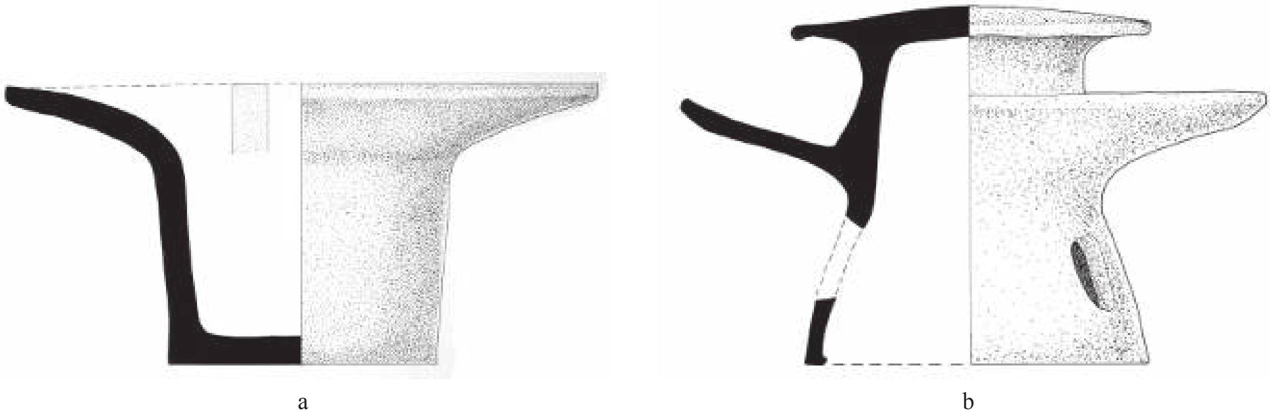


Figure 99 Cache N10-17/8, Lamanai, Terminal Classic/Early Postclassic (a) vessel 578/4 with signs of use as a censer and (b) censer 578/7 (drawings: Louise Belanger, Lamanai Project)

of the walls of the vessels in the form of a spiral. This may be associated with the vessel's manufacture through coiling and the exposure to fire and smoke. The burning of pure resin in a vessel can also be identified by the traces of it having dripped on the outer walls of the vessel. In addition, burned resin is shiny and highly combustible and can be distinguished from charcoal that is more opaque and less combustible.

The patterns obtained through experimental work were observed in archaeological specimens. Based on this, on information from ethnohistoric and ethnographic records, on various representations of the vessels in Maya art, and their contexts of recovery, several specimens can be confirmed as part of or complete incense burners: ladle censers, hollow cylindrical stands of different types, seated-effigy covers, flanged zoomorphic pedestal based censers, spiked pedestal-based censers and some containers with outflared walls. Other vessels use to burn incense (of any kind) is not so clear. These include: vases with a face effigy, three-pronged supports, spiked bucket-shaped vessels, and vessels with high walls and an everted rim. In the next chapter, I discuss different kinds of incense used in the Maya area in the present and in the past, which may better serve to identify censers and understand their use in ritual practices.

10. THE KINDS OF INCENSE USED IN THE MAYA AREA AND CENTRAL MEXICO

10.1. INTRODUCTION

The main purpose of this chapter is to address aspects of incense use in the Maya area in the present and in the past. Given that the function of incense burners is to burn incense, knowing the kinds of incense used can serve to increase our understanding of whether different circumstances called for different materials to be burnt. Both the act of burning incense and incense itself were meaningful and symbolic, as suggested archaeologically by the different shapes and colours in which incense was made as well as by ethnographic records (McGee 1990: 44; Wisdom 1940: 403). A better understanding of the types of incense used can therefore also shed light on the possible symbolism associated with incense in rituals in the past.

This chapter discusses different kinds of incense used in modern, historic and pre-Hispanic times by the Maya. Although most archaeological data on censers comes from Classic period activities, most of the documentary data available on incense from pre-Hispanic times in the Maya area dates to the Postclassic period. Because aspects of incense and its use in Postclassic and recent times are rooted in older practices and traditions, I discuss incense use in Postclassic and modern times in the hope that it can help in the elaboration of hypotheses about the incense that was used in earlier times.

This chapter also includes a comparison of incense used in the Maya area with incense used in areas of Central Mexico in modern, historic, and pre-Hispanic times. The comparison of Maya and Central Mexican forms of incense is made for several reasons: First, recent research on modern and ancient samples of incense in Central Mexico made new data available for the discussion. Second, it was thought that a comparison of the incense used in both areas through time could reveal interesting similarities and differences relevant to the past. Because Central Mexican influences in various forms of material culture are thought to have taken place in the Maya area during the transition between the Late Classic/Terminal Classic to the Postclassic period, a comparison of yet another form of material culture could potentially add to the debate about Central Mexican influences in the Maya area. It was anticipated that whereas some differences in the type of incense used would reflect local resources available in each area, others might more adequately be explained by differences in cultural traditions. Third, it was hoped that a consideration of the kinds of incense and the methods of extraction used in Central Mexico might help in the identification of possible yet unrecognized forms of incense in the Maya area.

10.2. MODERN SAMPLES OF INCENSE FROM THE MAYA AREA AND CENTRAL MEXICO

Various types of incense are used in the Maya area today. Aromatic plant resins can be found throughout the organs of numerous genera, in leaves, flowers, and wood. Modern incense is made from tree exudates and/or composites of leaves, bark, aromatic wood chips and resinous wood, independently or combined (Triplett 1999: 26, 42).

Systematic ethnobotanical studies of incense in the Maya area involving the collection and identification of modern samples using western scientific categorizations are few (Castorena *et al*. 1993; Tripplett 1999). The most thorough study was conducted by Kirsten Jill Tripplett (1999) who addressed the role of plant resins in modern Maya indigenous culture in Guatemala. Her project involved the collection of modern incense purchased from indigenous markets in Guatemala and the taxonomic identification of the resins through chemoanalytical techniques (gas chromatography – mass spectrometry). Tripplett's analyses suggest that two plant taxa, the Burseraceae and the Pinaceae, are the most important botanical sources of incense used by modern Maya.

In the following section, I present information about different kinds of incense collected by me in three markets from Guatemala and Mexico, and I discuss the indigenous names given to the samples collected. I then compare my samples with Central Mexican samples of incense from markets in Tepoztlan, located in the State of Morelos, Mexico which were obtained by Rebecca Stacey and analyzed at the British Museum (Stacey *et al.*

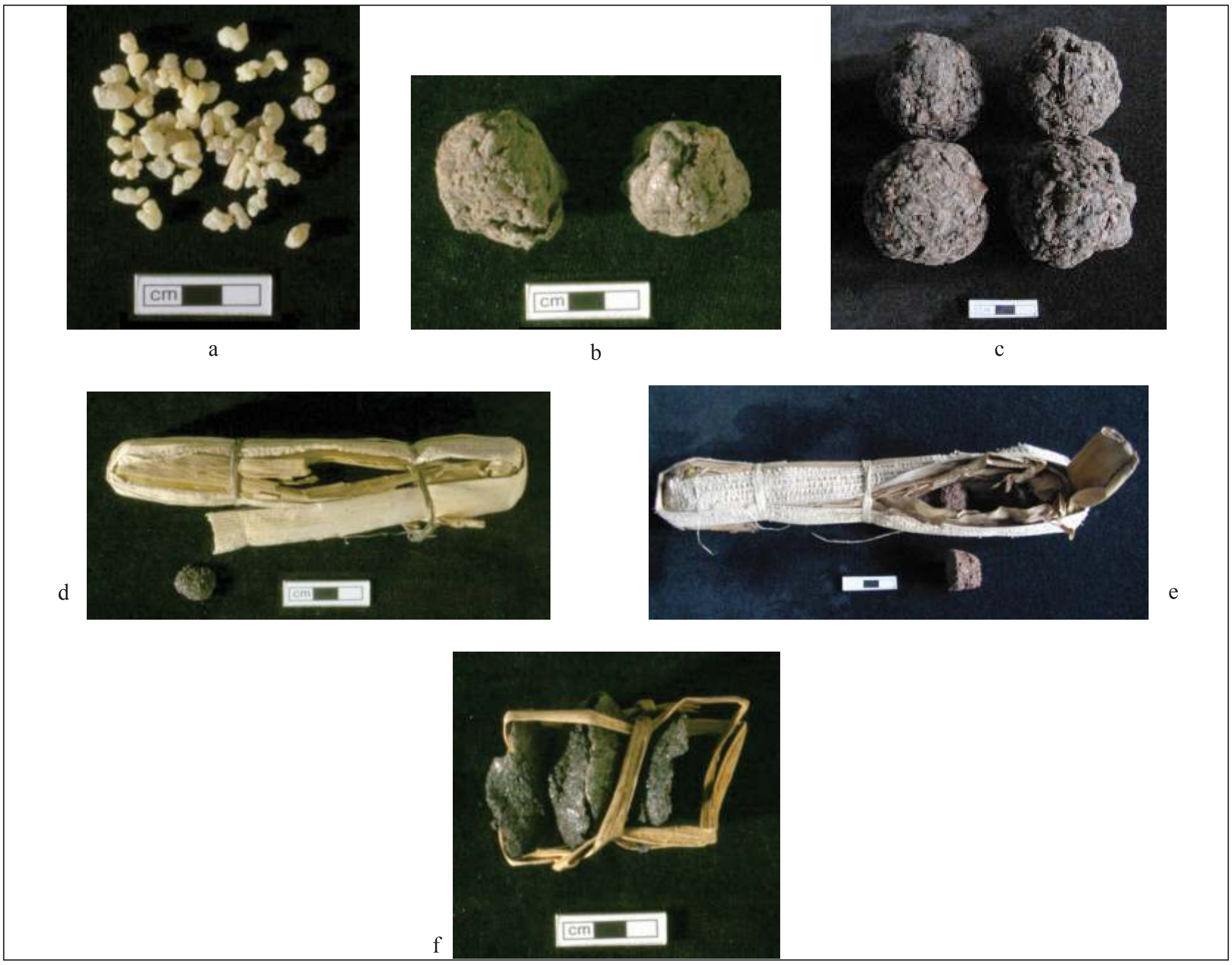


Figure 100 Modern incense from the Market of Santa Elena, Petén, Guatemala (a) *incienso en grano* (b) *copal bolita negro* (c) *bolas de copal* (d) *cuilco* (e) *ensarte* (f) *unidentified sample*

2006: 323-340). Incorporated in the discussions of incense from these two areas is information about a collection of modern samples of incense obtained in various markets from Central Mexico by Naoli Lona (2004a) as well as Tripplet's results (Tripplett 1999) of her analysis of incense samples from various markets in Guatemala.

10.2.1. Incense collected from the markets of Santa Elena, La Antigua, and Pino Suárez

During my fieldwork seasons conducted between 2004 and 2006, I collected samples of incense from the markets of Santa Elena in Peten, Guatemala; La Antigua in the Sacatepéquez Department located in the highlands of Guatemala; and Pino Suárez in Villahermosa, Tabasco, Mexico. The samples were obtained by visiting stands where incense was sold in these markets, and by informing the sales persons that I wanted to buy incense. The sales people were asked for the name of each type of incense sold to me and each sample was stored in a zip lock bag with its name. After collection, the samples were shown for further identification to Licenciado Ramos Noj, a K'iche *guía espiritual Maya* or *Ajq'ij* (in K'iche language) which means 'solar priest, the one who works with light, or white magician' (Ramos Noj, personal communication 2007, translation mine)[44]. During my first season in the field, Ramos Noj was in charge of the *Unidad de Lugares Sagrados* in the Ministry of Culture and Sports of Guatemala. After Ramos Noj's identification, the samples were analysed for source identification through gas chromatography-mass spectrometry by Brendan Derham at the University of Newcastle and were compared with ancient samples of incense from the Maya area that were also collected for this study. The results of Derham's study are presented in Section E of the Appendix (p. 155). Some of the results obtained from Derham's analysis are referred to in this chapter.

10.2.1.1. Incense from the market of Santa Elena

The samples of incense collected from the market of Santa Elena were: *incienso en grano* (granular incense) (Figure 100a), *copal bolita negro* (small black ball of copal) (Figure 100b), *bolas de copal* (balls of copal) (Figure 100c), *cuilco* (Figure 100d), *ensarte* (Figure 100e), an unidentified sample of incense (Figure 100f), *mirra* (Figures 101a and 101b), *copal blanco en hojas de guineo, pom* (white copal in banana leaves, pom) (Figure 101c), an unidentified

---

[44] In Spanish 'sacerdote solar, o el que trabaja con la luz, o mago blanco' (Ramos Noj, personal communication 2007).

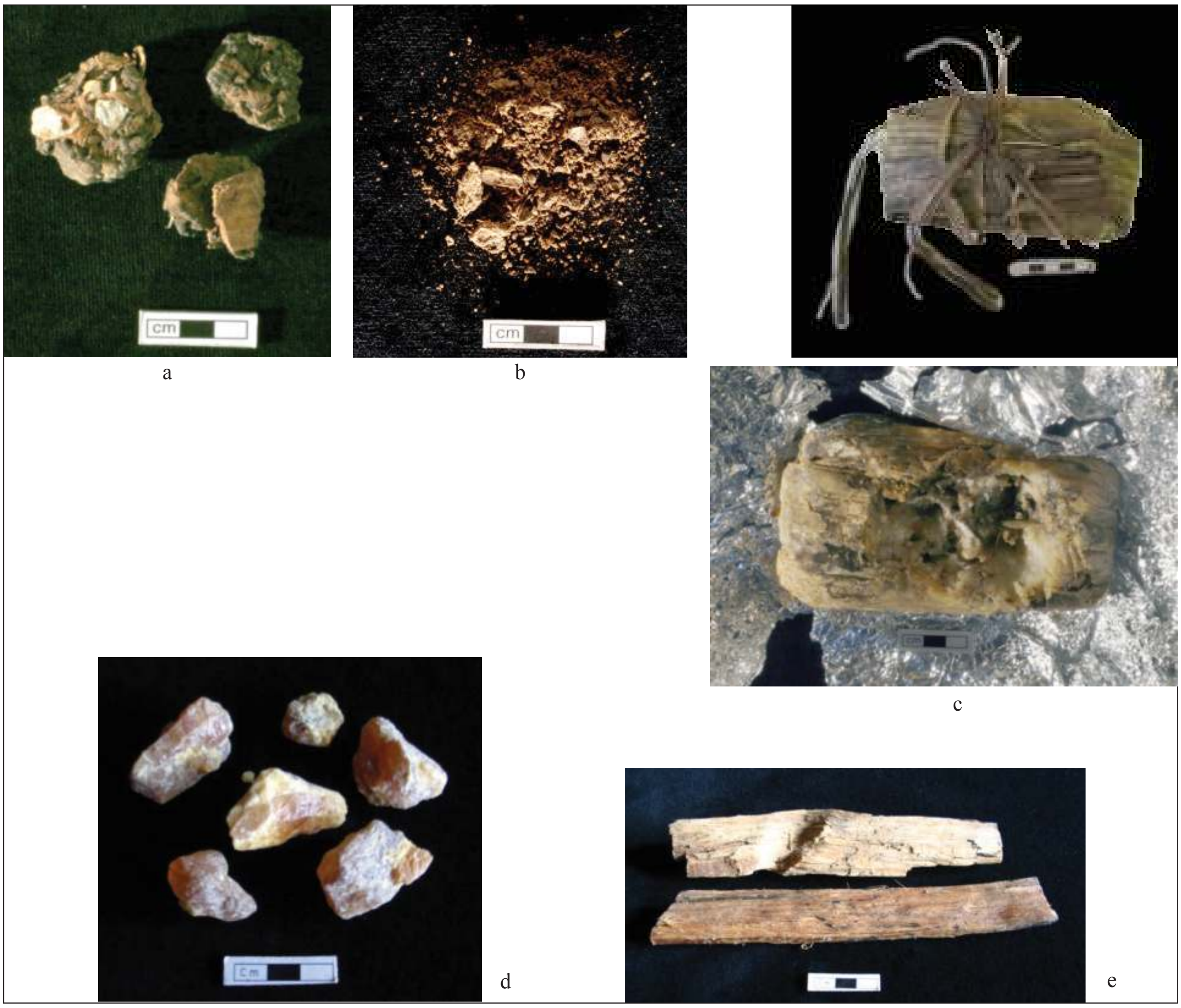


Figure 101 Modern incense from the Market of Santa Elena, Petén, Guatemala (a) *mirra* (b) *mirra* (c) *copal blanco, hojas de guineo, pom* (d) *unidentified cristaline yellowish incense* (e) *ocote*

crystalline yellowish sample of incense (Figure 101d) and *ocote* (Figure 101e).

Incienso en grano (granular incense) (Figure 100a) is physically similar to two samples of incense collected from other markets in this study: one obtained at the market of La Antigua as *incienso lágrima puro* (pure tears incense) (Figure 102a) and another one collected at the market of Pino Suárez, Villahermosa as *esencio del ambar* (incense of amber) (term used by informant, normally 'escencia') (Figure 104a).

The unidentified crystalline yellowish sample of incense (Figure 101d) is similar to another sample from the market of La Antigua sold as *incienso cristalino* (crystalline incense) whose use was described as '*para aromatizar, se tira arriba de brasas*' ('to perfume, it is thrown on the live coals') (Figure 102b).

In reference to some of the other samples collected, according to Ramos Noj, *cuilco* (Figure 100d) is made from pine resin and symbolizes a payment, 'the payment that one makes for one's sins'. It is made in the Department of Huehuetenango, in the Municipality of Cuilco. *Ensarte* (Figure 100e) is made with *aserrín de pino* (pine sawdust) and p*om bola* is also made from pine trees. Both *ensarte* and *pom bola* (in reference to the *bolas de copal*, Figure 100c) are made in Momostenango and Totonicapán (Santa María Chiquimula) (Ramos Noj, personal communication 2004).

10.2.1.2. Incense from the market of La Antigua

The samples of incense collected in the market of La Antigua were sold as *incienso lágrima puro* (pure tears of incense) (Figure 102a), *incienso cristalino para aromatizar* (crystalline incense to perfume) (Figure 102b), *estoraque* (Figure 102c), *cascarudo* (Figure 102d), *mirra* (Figure 102e), *romero* (rosemary) (Figure 102f), and *ocote* (Figure 103).

Ramos Noj identified *cascarudo* (Figure 102d) as *cascarita* (small hard outer covering). He noted that it is made from the bark of a tree and that it is a national product. About

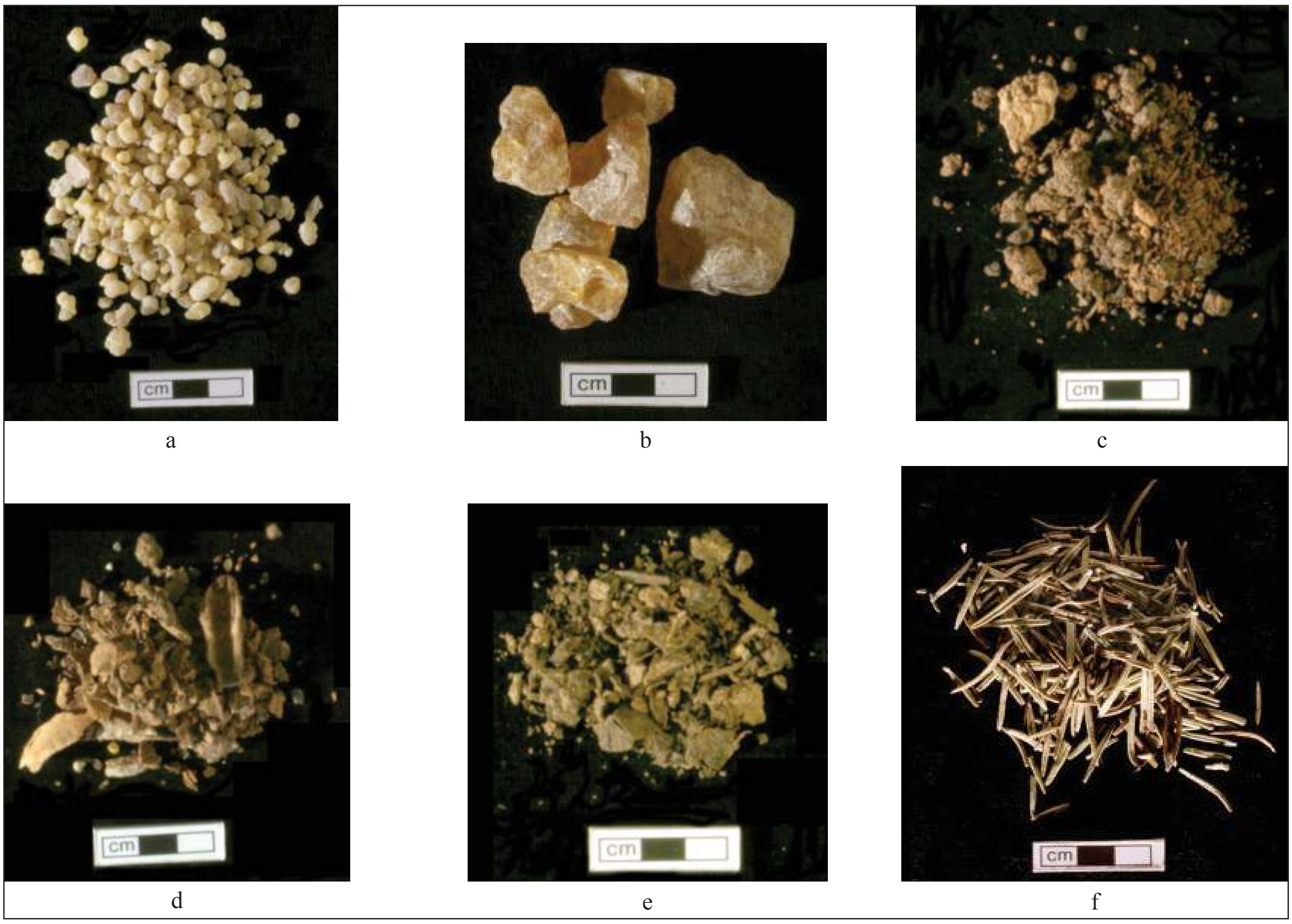


Figure 102 Modern incense from the Market of La Antigua (a) *incienso lágrima puro* (b) *incienso cristalino para aromatizar* (c) *estoraque* (d) *cascarudo* (e) *mirra* (f) *romero*

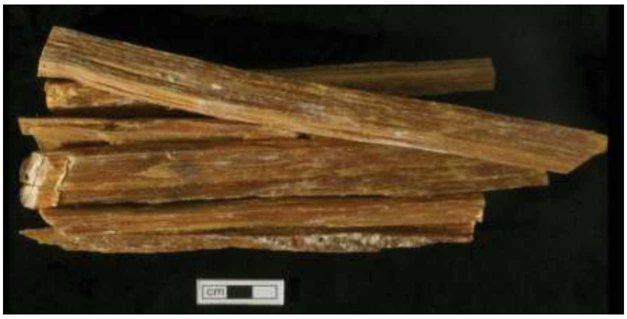


Figure 103 *Ocote* from the Market of La Antigua, Guatemala

the sample of *incienso lágrima puro* (incense pure tears) (Figure 102a), Ramos Noj mentioned that it is an import distributed in large amounts by Chinese people in the market located in Terminal 4 in Guatemala City. About the use of *romero* (rosemary) (Figure 102f), Ramos Noj said that it is burned inside incense burners because of its aroma (Ramos Noj, personal communication 2004).

10.2.1.3. Incense from the market of Pino Suárez

The incense collected in this market was *esencio del ambar* (incense of amber) (Figure 104a), *mirra* (Figure 104b), *estoraque* (Figure 104c), and *copal blanco* (white copal) (Figure 104d). In the same market I was also sold a *piedra lumbre* (Figure 104e) whose use was described by the person who sold it as '*se usa con incienso para despojar*' (it is used with incense to despoil).

According to Ramos Noj, the sample of *copal blanco* (white copal) (Figure 104d) comes from Coban, located in the Department of Alta Verapaz, and is referred to as *pom cobanero*. It is sold in the form of a ball (although the sample collected in Pino Suárez is broken into pieces) and it is from a tree that grows in the mountains in the areas of Coban, Lanquín[45], Cahabon, and Chal. The tree is the *copal pom*, the same tree of the sample of *copal blanco* wrapped in banana leaves (Figure 101c) from the market of Santa Elena (Ramos Noj, personal communication, 2004).

10.2.1.4. Discussion of the names of the collected samples

Many of the names of the incense samples obtained from the three markets contain attributives on the semantic dimensions of shape, colour and size. The names *incienso*

---

[45] Triplett has confirmed based on personal field observations in 1994 that copal pom production is still very important in the Department of Alta Verapaz, especially in the nearby town of San Agustin Lanquín or Lanquín. The author also notes that Standley and Steymark (1946) confirmed that the collection of copal was also important in Alta Verapaz in the twentieth century. Lanquín was also an area of copal collection shortly before and after the arrival of the Spanish (Triplett 1999: 109).

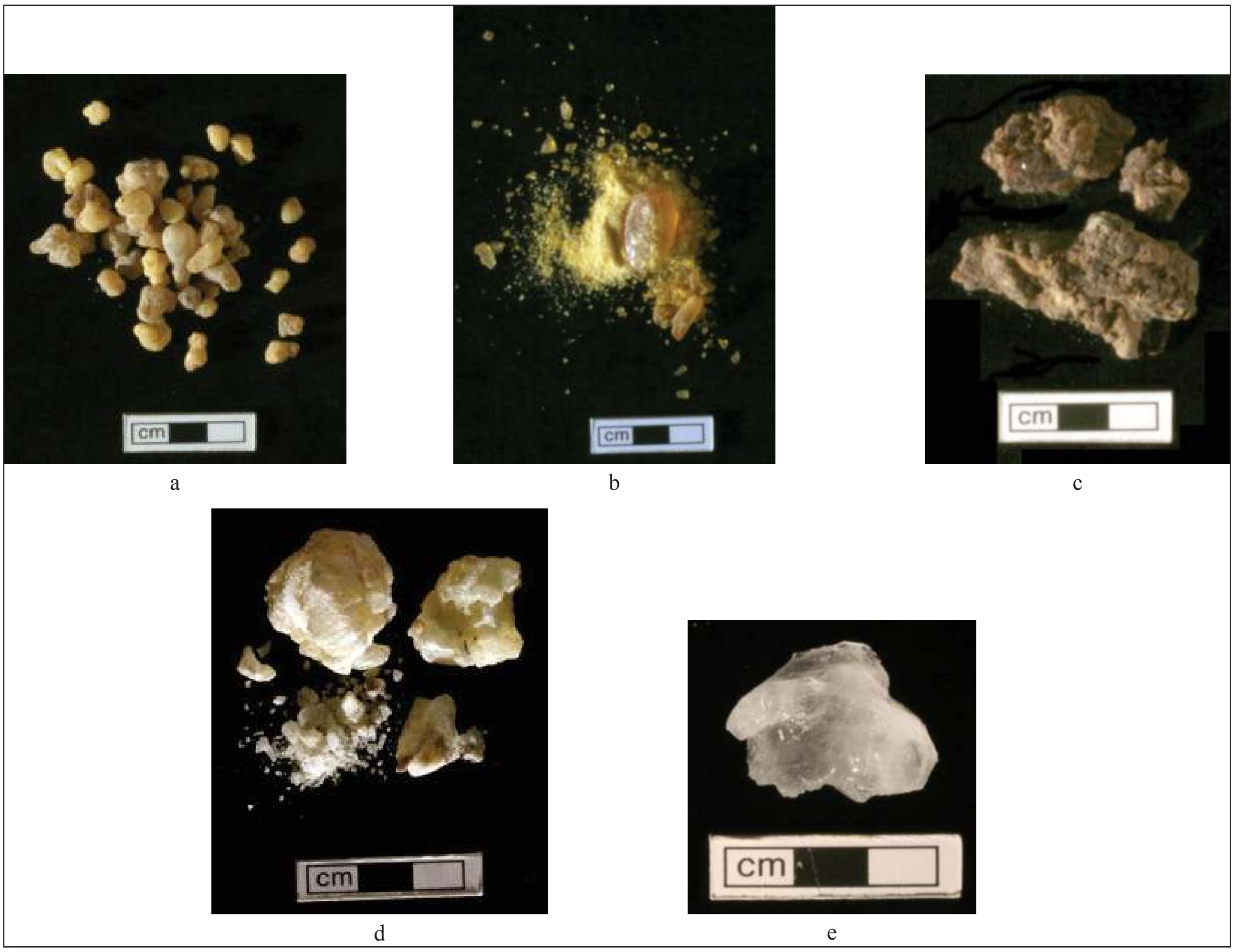


Figure 104 Modern incense and a piedra lumbre from the Market of Pino Suárez, Villahermosa, Tabasco, Mexico (a) *esencio del ambar* (b) *mirra* (c) *estoraque* (d) *copal blanco* (e) *piedra lumbre*

en grano (granular incense), *incienso lágrima puro* (pure tears incense) and *bolas de copal* (copal balls) are marked by shape and size attributives. *Copal bolita negro* (small black ball of copal) is marked by both shape, colour, and size attributives. *Copal blanco* (white copal) and *incienso cristalino* (crystalline incense) have attributives marking characters of colour and structure.

Other names of the collected samples from the markets mentioned above are *ocote*, *ensarte*, *cuilco*, *mirra*, *estoraque*, and *cascarudo*. *Ensarte* could come from the term '*en sarta'* in Spanish. *Sarta* is defined in the *Diccionario de la Lengua Española* (2001) as '*porción de gentes o otras cosas que van o se consideran en fila unas tras otras*' ('group of people or other things that go or that are considered in line one after the other'). *En sarta* in the context of this definition can be understood as a group of things that are in line one after another, such as the form in which incense is placed within leaves. Ramos Noj explained that the name *ensarte* comes from *ensarta*. According to Ramos Noj, 'the name is given because this *pom* is made with the form of the sarta, this is, the unit, and then packed in a series of 9, 13 or 20 depending on the size that is given to it. This series is called *ensarta*' (Ramos Noj, personal communication, 2007, translation mine).

As previously mentioned, *cascarudo* was identified by Ramos Noj as *cascarita* which according to him is made from the bark of a tree. '*Ocote*' is a term used for a highly resinous wood from pine trees (Ramos Noj, personal communication 2004). According to Ramos Noj, 'it has always been used' in the burning of incense and it is especially found in the highlands of Guatemala in places such as Totonicapán, Tecpan, Momostenango, and Poaquil. Certain pine trees, however, do grow in the lowlands, such as the Moctezuma pine tree (Ramos Noj, personal communication 2004). *Ocote* is commonly sold in markets in the form of splints in bundles. The identification of *ocote* as a pine tree was recorded by Fray Francisco Ximénez in the sixteenth century document *Historia Natural del Reino de Guatemala*. In a reference to pine trees, the author wrote: 'This tree is very common in all these lands and especially in high mountainous country, and they are grown very much, there are pines that are as high as a hundred *varas*. Among them there are many differences, one is called ocote, and its wood is red because of all the resin it has, and when matured they have good and long lasting wood (Ximénez 1967: 237)'[46].

---

[46] The original text is '[e]s comunissimo aqueste árbol, en todas aquestas tierras en especial en serranías altas, y se crían terribles, que hay pino que sube más de cien varas en alto. Y entre ellos hay muchas diferencias,

'Mirra' is a term introduced into the Maya area that derives from *myrra* in Greek and *myrrha* in Latin. It is defined as a term used in the Old World to refer to an aromatic red, semi-transparent sap in the form of 'tears' from trees of the family Burseraceae which was used as a balsam (*Diccionario de la lengua Española*, 2001). In the Maya area, as well as in other parts of Central Mexico, mirra appears to be the bark of a tree graded in different sizes. The three samples of mirra collected in this study from the markets of Santa Elena and La Antigua (Figures 101a, b and 102e) seem to correspond to Tripplett's (1999: Table 5.2) description of a sample of mirra obtained from Quetzaltenango in the Department of the same name in Guatemala as bark chips. A sample of *copal mirra* from a market in Tepoztlan in the state of Morelos in Central Mexico collected by Rebecca Stacey is also composed of bark fragments (Figure 105c). In addition, three other samples sold as mirra and collected by Naoli Victoria Lona from markets and shops in Yecapixtla and Axochiapan in Morelos, and Jolalpan in Puebla, are reported to have been obtained from Guerrero where they were identified by the people who sold them as bark from the copal tree (Lona 2004a: 32-58, Cuadro 1). Based on these samples, mirra appears to refer to the bark of a tree used as incense[47]. The kind of tree/s used to obtain mirra in different areas is yet undetermined. An exception to the examples mentioned above, however, is a sample collected at the market of Pino Suárez, Villahermosa, in Tabasco, Mexico that is composed of a translucent yellowish dried resin (Figure 104b). The sample is similar to two other samples: one from Santa Elena, Peten (Figure 101d) and another one identified as '*incienso cristalino para aromatizar*' from La Antigua, Guatemala (Figure 102b).

The word 'estoraque', in Spanish, comes from *styrax* in Greek and *styraca* and *storax* in Latin and was introduced to Mesoamerica. In the *Diccionario Medieval Español* 'estoraque' is a term attributed to a tree of the family Styraceae, to the very odorous balsam that can be obtained from the tree used for perfumery and medicine, as well as the odoriferous gum obtained from the estoraque tree (Alonso 1986). *Styrax* is a genus of about a hundred and twenty species of large shrubs or trees in the family Styraceae distributed in eastern and southeastern Asia, the New World, and the Mediterranean region. Species of the genus *Styrax* are endemic in various parts of Mesoamerica. They can be found in Central Mexico and they are also distributed from the Sierra Madre and Central Plateau of Chiapas through the mountainous regions of Guatemala, isolated parts of Belize, northwestern El Salvador, and Honduras, as well as parts of Nicaragua and Panama. Species of *Styrax* are most commonly found above 500 m in elevation although some occur below this altitude. Although it most often appears in association with *Pinus* and *Quercus*, *Styrax* can also be found in tropical humid forests, subtropical and temperate deciduous forests as well as in open savannas (Fritsch 1997:705-708; for a more detailed distribution see Fritsch 1997: Fig. 1). In the *Catálogo de Nombres Vulgares y Científicos de Plantas Mexicanas* the term 'estoraque', as used in Villa Flores, Chiapas, is attributed to *Styrax argenteus* Presl.-Estiracaceas. However, it is also described in the catalogue as a common name used in Chiapas and Oaxaca in association with *Liquidambar Styraciflu*a L.- Hamamelidaceas. It is mentioned that the trees produce a resin that is burnt as incense or that is aromatic[48]. This information suggests that estoraque incense could be extracted from both trees (*Styrax argenteus* Presl.-Estiracaceas and/or *Liquidambar Styraciflua* L.-Hamamelidaceas).

The term 'estoraque' is recorded in several colonial documents and various ethnographic studies in Central Mexico and the Maya area and continues to be used in these areas today. The botanical source or sources of estoraque in Mesoamerica is not clear but the composition of the estoraque used as incense by native people of Central Mexico and the Maya area in the present and possibly in the past seems to have been the bark of trees and possibly branchlets sometimes with gum or resin.

'*Estoraque olor*' (estoraque scent) was defined by Fray Alonso de Molina in the XVI century in Central Mexico as '*castillan copalli'* (Molina [1571] 1970). Fray Francisco Ximénez, a colonial chronicler of the XVIII century, identified estoraque in the *Historia Natural del Reino de Guatemala* as a tree whose gum and bark when burned in light coals was no different from the estoraque of the 'Old World'. Ximénez wrote: '[t]here are here in the rivers of hot lands some very large trees that are called estoraque, its gum and bark burned in red-hot coals is not different from estoraque. It may be the same one, and here they do not know how to benefit from it as they do in the orient' (Ximénez 1967: 245, translation mine)[49]. The author alluded to the use of the gum and bark of the estoraque tree by the native people and claimed that estoraque was used in the Old World more effectively, thus differently. Also during the XVI century, Monrades ([1574] 1925: 22) wrote that Storacke was sold in the 'Indians' (Indios) markets and was made from the buds of the trees.

The term 'Estoraque' also appears in the Sierra Codex (León 1982: 46), a sixteenth century manuscript in the Nahuatl language which contains information about

---

uno es el que llaman ocote, y su madera es colorada de mucha resina que tiene, y estos en sazón es gran madera, y muy durable' (Ximénez 1967: 237).

[47] Aurora Montúfar López (2004: 33) describes mirra as '*corteza (astillas) de copal'* (bark (splinters) of copal). She notes that it has been identified as a product that is sold in markets of the following places in the central and southern region of Mexico: Mexico, D.F.; Texcoco, Estado de México; Ixmiquilpan and Zimapan, Hidalgo; Izucar de Matamoros, Cholula, Tzicatlan, Jolalpan and Teotlalco, Puebbla; Axochiapan, Tepalcingo and Yecapixtla, Morelos; Villahermosa, Tabasco; Tuxtepec, Valle Nacional and Huautla de Jiménez, Oaxaca; and San Cristóbal de las Casas and Palenque, Chiapas.

[48] In the *Catálogo de Nombres Vulgares y Científicos de Plantas Mexicanas*, the term 'estoraque' as used in Villa Flores, Chiapas is described as: '(Villa Flores, Chis) Arbol hasta de 20 m, de hojas lanceolado-oblongas, brillantes, blanquecinas abajo; flores de 12-20 mm; caliz trucnado, corola blanca de 5 petalos valvados: estambres 10; fruto de 1 semilla. El tronco produce una resina aromática que se quema como incienso. *Styrax argenteus* Presl – Estiracaceas. Sinaloa a Chiapas' (Miranda, La veg. De Chiapas). In the same catalogue, the term as used in Oaxaca and Chiapas is described as: '(Oaxaca; Chiapas) Arbol de hojas lobuladas, aromáticas, con los lobulos agudos; flores globoso erizado de puntas. Este árbol produce una resina aromática. *Liquidambar styraciflua* L. –Hamamelidaceas. Veracruz, Hidalgo, Oaxaca, Chiapas' (Ramírez y Alcocer).

[49] The original text is '[h]ay aquí en los ríos de tierras calientes unos árboles bien grandes que llaman estoraque, que su goma, y su corteza quemada en ascuas, no se distingue del estoraque. Y puede ser que sea el mismo, y aquí no le saben dar el beneficio que allí le dan en el oriente' (Ximénez 1967: 245).

expenditures of the town of Santa Catarina Texupan, located in the Lower Mixtec area of Oaxaca. In this document, estoraque figures among some of the items that were bought for the Catholic religious ceremonies. Although the composition of estoraque is not mentioned in this document, Tripplet (1999: 194-195) notes that *estoraque en lágrima* (estoraque in tears) is present in a document from the *Archivo General de las Indias* at Seville, Spain, titled *Indiferente 1552* (written ca.1760) which includes records about trade of various American plants, some of which are from Guatemala and Mexico. The mention of estoraque '*en lágrima*' in this document, suggests that estoraque may have been obtained in the form of tears of resin as a trade product for Spanish people and perhaps it could have also been used by the church in this form during Colonial times. Ximénez's description and comment on the estoraque used in the New World as different from the one used in the Old World would seem to support this idea.

The modern samples of estoraque from the markets of Pino Suárez (Figure 104c) and La Antigua (Figure 102c) collected for this project seem to consist of the bark and/or wood of a tree, with perhaps some resin, but their composition is difficult to identify at first sight. Kristen Jill Tripplett has described a modern sample of estoraque from Totonicapán located in the Department of Totonicapán, Guatemala as a mix of clear resins and branchlets. The author described the sample in more detail as a 'mass of small twigs completely covered with [a] shiny hard layer of resin. Second piece of [the] sample is a branch of 2.5 cm. Very light-weight and sweetly fragrant. Bark doesn't seem to resemble Pinus but may be too immature to display characteristic bark. However, branches display potential for whorled arrangement. Whitish sap present' (Tripplett 1999: 323-324).

Lona (2004a: 234) has identified the samples of *estoraque* that she collected in markets from Central Mexico as *viruta de madera* (shaving of wood), regularly of a light colour.

10.2.2. A comparison of the samples from the markets of Santa Elena, La Antigua, and Pino Suárez with samples from a market in Tepoztlan, Morelos, in Central Mexico

Several modern samples of incense were collected by Rebecca Stacey in markets in Tepoztlan, Morelos, in 2004-2005. The samples were subjected to gas chromatography – mass spectrometry at the British Museum for botanical identification (Stacey *et al*. 2006: 323-340) and are presented in this section to compare their names and general physical attributes with the samples obtained in the Maya area for this study.

The names of the samples of incense collected by Stacey were: *copal blanco* (white copal) (Figure 105a), *copal lágrima* (tear-shaped copal) (Figure 105b), *copal mirra* (Figure 105c), *copal incienso* (copal incense) (Figure 105d), *copal negro* (black copal) (Figure 105e), and *copal piedra* (stone copal) (Figure 105f).

With the exception of *copal piedra* and *copal incienso*, the names of the samples collected in the markets of Tepoztlan match or are similar to the names of the samples collected in the markets of Santa Elena, Pino Suárez, and La Antigua from the Maya area. None of my samples appear to be similar in name or physical attributes to the sample of *copal de piedra*. In contrast, the sample of *copal incienso* (copal incense) from a market in Tepoztlan (Figure 105d) is similar in shape and colour to the sample of *incienso cristalino* (crystalline incense) from the market of La Antigua (Figure 102b) and to the unidentified sample of crystalline yellowish incense from the market of Santa Elena (Figure 101d).

Copal lágrima (tear-shaped copal) from a market in Tepoztlan (Figure 105b) appears to be similar in size, shape and colour to *incienso en grano* (granular incense) from the market of Santa Elena (Figure 100a), *incienso lágrima puro* (pure tears incense) from the Market of La Antigua (Figure 102a), and *esencio del ambar* (incense of amber) from the Market of Pino Suárez (Figure 104a). Interestingly, the sample of *copal lágrima* from Tepoztlan was identified by gas chromatography – mass spectrometry as *Boswellia*, which is frankincense, suggesting that this particular sample is not native to Mesoamerica and is therefore an import (Stacey *et al*. 2006: 338)[50]. The sample of *incienso lágrima puro* collected at the market of La Antigua in Guatemala, described as 'small yellowish amorphous lumps' was identified as consisting of Boswelic acid derivatives (Brendan Derham, Section D Appendix, p. 144). Ramos Noj's identification of this sample as an import distributed in large amounts in the market situated in Terminal 4 in Guatemala City is also of interest and suggests that at least some of the incense with these physical attributes sold in markets in the Maya area as well as Central Mexico and possibly other areas in Mesoamerica may be imported. Tripplett made a similar comment regarding an incense sample identified by its vendor as not being from Guatemala. The sample was described by Tripplett as 'granular, sugar-like globules, with a slight reddish colour. No signs of bark or organic matter are included which might aid in identification'. The source of this material could not be identified after Triplett's analysis (Tripplett 1999: 30). An interesting comment was made by Naoli Victoria Lona regarding the origin of a kind of incense called *lagrimita*, *incienso* o *incienso de lágrima* from markets in Central Mexico. The author noted that

> The *incienso* is another material that is frequently found in the markets, whose function is only aromatic. The informants of the different places that were visited both in Mexico City and in the Republic agreed that contrary to copal this material was synthetic. Its typical form is irregular balls of .5 to 1.5 cm long in average. The small spheres are called *lagrimita*, while the bigger ones are generally known simply as *incienso*, although in some places they are called *incienso en lágrima* (Lona 2004a: 31)[51].

---

[50] According to Stacey, 'copal lágrima' may be obtained for the Christian church and may have found its way into indigenous markets through this way (Rebecca Stacey, personal communication 2007).

[51] The original text is: 'El 'incienso' es otro material frecuente en los mercados, cuya función es meramente aromática. Los informantes en los distintos lugares visitados tanto en la ciudad de México como en la Republica, concordaron en que, a diferencia del copal, este material era de origen sintético. Su forma típica son bolas de silueta irregular de .5 a 1.5 cm de longitud promedio. Las esferas pequeñas son llamadas

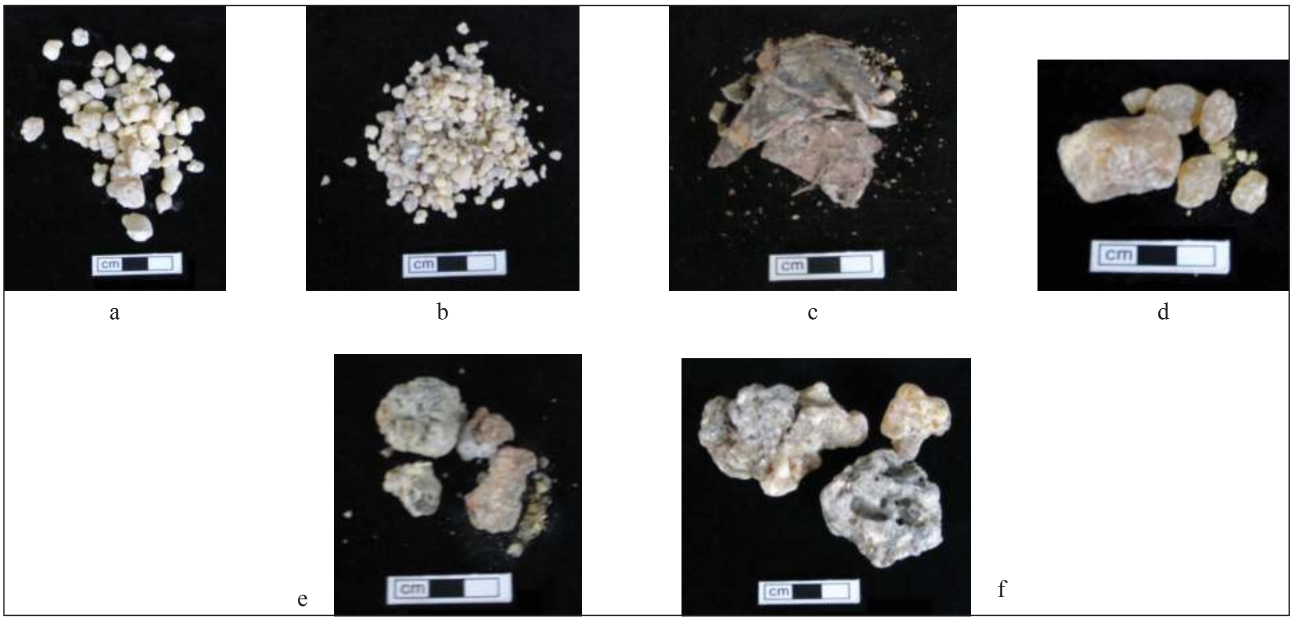


Figure 105 Modern incense from markets in Tepoztlán, Central Mexico, collected during 2004-2005 (photos: author, with permission of Rebecca Stacey) (a) *copal blanco* (b) *copal lágrima* (c) *copal mirra* (d) *copal incienso* (e) *copal negro* (f) *copal piedra*

10.3. THE USE OF POM AND COPALLI

10.3.1. The use of *pom* and *Copalli* in Modern times

10.3.1.1. The terminology of pom in the Maya area

Pom is a term used for incense in the Maya area. The Spaniards called it *copal* from the Mexican term *copalli* in Nahuatl and they often referred to it in ethnohistoric documents as 'the incense of this land' (Antonio de Ciudad Real 1984; Benavente [1568] 1971: 86; Serna 1953: 94). In some colonial documents that I refer to below, 'copal' is used as incense in the form of resin.

In modern times, the term 'copal' is used for types of incense that involve not only resin but also other parts of trees (i.e. 'copal bolita negro' (Figure 100b) and 'bolas de copal' (Figure 100c)). A distinction is made between 'copal blanco' made of pure resin and 'copal negro' made with the bark of trees and resin. Of the modern samples of incense collected for this study, the only sample deliberately identified as 'pom' by the person who sold it consists of pure resin (Figure 101c). It was sold as 'copal blanco, hojas de guineo, pom' in the market of Santa Elena. According to Ramos Noj, the term 'pom' is used locally [possibly referring to Guatemala City and surrounding areas] for several types of incense such as *pom guacalito* that has the shape of the *guacal*, and *pom tacaná*, another incense that has the shape of an hourglass.

Two ethnographic studies—one conducted of a Q'eqchi' family living in the village of Mocozal, Department of Peten and another one conducted in Motozintla in Chiapas, Mexico, located in an area known for its copal production in modern and historic times—suggest that the term '*pom'* is used at least in these two cases to refer to the copal incense as well as to the trees from which pom incense is obtained (García 1981: 93-104, 109-110; Kockelman 1999: 178)[52].

10.3.1.2. The botanical sources of pom

Ethnographic studies indicate that the tree resins used for the incense known as *pom* have diverse plant sources (García 1981: 109-112; Landa 1941: 75 n. 338; Tripplett 1999: 8). *Pom* has mainly been identified in modern times with several species of the family Burceraceae (García 1981: 109-110; Landa 1941: 75; Laughlin 1975: 282; Tripplett 1999) and the family Pinaceae (*Pinus*) (McGee 1990: 44; Tripplett 1999).

10.3.1.3. The extraction and elaboration of pom

Several studies have been conducted on the extraction of copal in the Maya area (García 1981; Kockelman 1999: 176-179; McGee 1990: 44; Wisdom 1940: 387, 474). The studies suggest that two main processes of extraction of copal seem to have commonly been used in the area: one by incision to collect white copal, and another one by raising the bark of the tree in small pieces with an instrument and collecting the bark together with some resin, a product that may be referred to as black copal. Although small variations may exist in each of these processes, the two

---

'lagrimita', en tanto que las de mayor tamaño se les conoce por lo general sencillamente como 'incienso', aunque en algunos lugares le llaman 'incienso de lágrima' (Lona 2004a: 31).

[52] Kockelman's study of the collection of copal incense by a Q'eqchi' family from the small village of Mocozal located in the Department of Peten, Guatemala indicates that the 'base-morpheme *pom* is used in the 'collection milieu' to refer to 'both the resin-giving and the non-resin-giving variety of the copal tree (…) a distinction that is made explicit via the sign *sak ti pom* and *kaqipom* or white and red copal tree' (Kockelman 1999: 178). The author also notes that within this milieu the resin which is inside or outside the tree is not referred to as pom but as *q'ol* (sap). The resin is referred to as *pom* after its collection during transportation and afterwards (Kockelman 1999: 178-179).

methods of extraction are referred to in García's (1981) study of the ethnology of copal in Motozintla, Chiapas, Mexico, a traditional centre of copal extraction. The author recorded two processes of extraction by a Mocho *copalero*[53]: one to obtain the resin with which the *saq ti po.m* (spelling as in García 1981: 121) or white copal is made and another one to obtain *qe q ti po.m* (spelling as in García 1981: 124) or black copal.

White copal or *saq ti po.m* is extracted by a Mocho family by making diagonal incisions on the tree which cause the exudation of sap. As the sap is released from the tree it is accumulated on a maguey leaf that has been hung from a branch or a curved section of the trunk of the tree and is then collected (García 1981: 116-120)[54]. Black copal or *qe' q ti po.m*, on the other hand, is mostly made from the bark of the tree. With a tool called '*h'osbal po.m'* the *copalero* from Motozintla raises small pieces of the bark of the tree by knocking the *h'osbal po.m*. The tree automatically secretes a sap of yellow colour which is gathered together with the bark of the tree. After its collection, the bark mixed with the sap is put to dry under the sun and may be stored for some days (García 1981: 120-121, 124-126)[55].

10.3.1.4. The terminology of copalli in Central Mexico

Copal is a term that derives from *copalli* used in Colonial times to refer to incense (Molina [1571] 1970). It is also a generic term in Central Mexico today that subsumes various species of trees (Lona 2004a; Martínez 1987: 212-216; Noguera 1945: 1, 2; Rzedoswky and Guevara 1992: 3; Stacey *et al*. 2006). According to Lona, the sources of copal in Tenochtitlan were and continue to be trees of the family Burseraceae, of the genera *Bursera* and *Protium*. The author suggests that the main source of resin today is obtained from the *Bursera* genus of the species *Bursera bipinnata*, although other species of *Bursera* are sometimes used. The species used from the genus *Protium* is the *Protium copal* (Lona 2004a: 15-17).

10.3.1.5. The extraction and elaboration of copalli in Central Mexico

Based on ethnographic work which involved visits to markets and localities in Mexico City, Morelos, Puebla, and Guerrero (identified as main centres for the distribution of resins) Naoli Victoria Lona (2004a) recognizes two methods of extraction of the copal resin in these areas. One method involves the extraction of resin by incision to obtain *copal blanco* (white copal), also called *copal santo* (holy copal) or *copal de penca* (fleshy leaf copal). The form of the product obtained is different from the one that results from the extraction of white resin by incision in the Maya area and consists of bars of white copal which are formed in and take the form of the maguey leaves used to collect the resin from the trees. Another method involves the extraction of a resin called *copal de goma* (gum copal), also called *copal de piedra* (stone copal) (Lona 2004a: 3), referred to by the people who sell it as *negro*, with the form of small grey or black pellets which exude naturally from the tree and which accumulate on its surface on its trunk and branches[56]. As explained by Naoli Victoria Lona.

> The resin can be observed in two forms, the so-called resin or copal *de goma* or *de piedra* and the *copal blanco* or *santo*. The distinction lies in the method of collection or extraction of the material, since the former comes out naturally from the tree being deposited in the surface of the trunk in the form of small pellets predominantly of a grey colour, while the latter is obtained through diagonal incisions on the trunk or branches causing the emanation of the milky sap of the tree which, due to gravity, accumulates in maguey leaves previously hung by the *copaleros*. Once the substance solidifies it acquires the form of its container, that is, of the leaves, obtaining in this way the bars of *copal blanco*. It is in this form that it is carried out in the local trade or it is transported from the place where it was collected to Mexico City (Lona 2004a: 3, translation mine)[57].

In reference to the *copal de goma*, informants from Teloloapan explained that small worms which live in the bark of the tree make holes on the bark, thus making the resin exhudate. The insects with their feet model the resin into pellets, perhaps with the purpose of making a shelter (Lona 2004a: 46-47). Several of Lona's informants explained that the small grey or black pellets of *copal de goma*, are collected by scraping the surface of the bark of the tree with a machete or a curved knife to release them. According to Lona, the copal trees exude this resin in the form of pellets in a way that is 'naturally induced' by insects (such as wasps of the Family Megachilidae of the genus *Dianthidium* sp). The insects lay the eggs on the bark of the tree and when hatching, the larvae feed on the wood, which causes the tree to exude the resin naturally in the form of pellets (Armando Gómez, personal communication to Lona 2004 as cited in Lona 2004a: 56, n.121).

---

[53] Mocho' is a Mayan language spoken in the Mexican state of Chiapas. A *copalero* is a person who collects copal or works the copal.

[54] White copal is later sold in the form of boards of copal or in the form of *pante*. The author describes the elaboration of *pante* of white copal after its extraction. With the wood of the *palo cajete*, called *palo de corcho* or *jopy*, cyilinders of five to seven cm in length and two to three cm wide of an approximately rectangular shape are made with the machete. The white copal is left to soften for half an hour and then layed out on a round stone. With a round stone in his hand the *copalero* works the resin by striking it and turning it over so that it becomes malleable and homogeneous. After this, the small cylinders are covered with a fine layer of resin. The pantes are finished when they are wrapped with banana leafs. Their two ends and sometimes the centre are attached with strips made of the same bark (García 1981: 122-124).

[55] The product can be sold in this form to be burned directly as copal called *kaq po.m* (red copal) or *c'i'n po.m* (bark of copal). Alternatively, black balls can be made with it. For the elaboration of copal balls the bark with the resin is put under the sun to be softened and is crushed in small pieces. With this material, balls of approximately two to three cm are made (García 1981: 120-121, 124-126).

[56] Lona notes that this copal also contains small parts of branches, bark and insects (Lona, personal communication 2007).

[57] The original passage is: 'La resina puede observarse en dos presentaciones, la llamada resina o copal de goma o piedra y el copal blanco o santo. La distinción se debe a la manera de recolección o extracción del material, ya que el primero brota de manera natural del árbol depositándose en la superficie del tronco en forma de 'bolitas' de color gris predominantemente, en tanto que el segundo se obtiene mediante incisiones diagonales en el tronco o ramas provocando la emanación de la savia lechosa del árbol, la cual, por gravedad, se acumula en pencas de maguey colocadas previamente por los copaleros. Una vez que la sustancia se solidifica, adquiere la forma de su contenedor, es decir de la penca, obteniendo así barras de copal blanco. En esta forma es como se lleva a cabo el comercio local o bien es transportado desde la tierra de recolección hasta la Ciudad de México' (Lona 2004a: 3).

10.3.2. The use of pom and *copalli* in Colonial times

10.3.2.1. The terminology of pom in the Maya area

Colonial ethnohistoric documents from the Maya area suggest that *pom* may have also had diverse plant sources during the first centuries after the arrival of the Spaniards in Mesoamerica. In the *Relación del Pueblo de Mama* ([1580], RY, 1: 56 as cited in Landa 1941: 75, n. 338) written in the sixteenth century we read that '[t]here is a great quantity of trees called *pom* in their language. From these, they obtained a certain resin-like incense with which the natives smoked their idols and houses of idolatry. The Spaniards use it for many diseases and call it copal, which is a Mexican word'.

10.3.2.2. The extraction of pom

References about the extraction of white copal by incision in the Maya area can be found in Colonial documents. In the *Relación del Pueblo de Mama* ([1580], RY, 1: 169, as cited in Landa 1941: 75, n. 338) we read that '[t]here is a tree which the Indians call *pom*. It is about as large as a large fig tree. Upon striking some blows all around it and leaving it for two days it distils from itself a resin like turpentine, except that it is harder and very white. The Spaniards call it copal (...)'.

Another reference to the same method of resin extraction can be found in the *Relación de las Cosas de Yucatán*, written by Diego de Landa, where we also learn that incense trees were cultivated. 'They raised many trees of the incense for the idols and they got it out by wounding the tree in the bark with a stone so that gum or resin should run from it. The tree is fresh, tall and with good shade and leafage, but its flower makes the wax black, where it grows' (Landa 1941: 197) [58].

10.3.2.3. The ritual use of pom or copal in the Maya area and its different forms

The use of copal in religious rituals in the Maya area is very well documented in ethnohistoric records (Landa 1941; Ximénez 1967: 246) and so is its use for medicinal purposes (Roys 1931: 13, 31, 32, 67, 124). In *Yerbas y Hechicerías del Yucatán* (f. 220 r) for instance, we read: 'This tree, *pom*, is the copal, as they call it. It is heating to a high degree and so useful a tree that its resin, which is like incense is what they ordinarily use in the poor churches. The Indians commonly use it in their idolatries' (Yerbas y Hechicerías del Yucatán, f. 220 r).

In the *Relación de las Cosas de Yucatán*, one of the most important colonial sources where Maya rituals are recorded, the term 'pom' is not used and 'copal' is used three times only to refer to incense that is burned in religious rituals without a description of its particular form or shape (Landa 1941: 110, 166, 158). Most commonly, Diego de Landa made use of the word 'incienso' (incense) without specifying its kind. Some exceptions are references to specific kinds of incense, such as in the use of the words *kik*[59] and *chahalte*[60] (Landa 1941: 140, 142, 144).

10.3.2.4. The terminology of copalli

Salinas Guevara and Castellanos Dounce (2004) note that the Nahuatl term *copalli* was also a generic term used as incense from diverse plant sources in Central Mexico during Colonial times (Martínez 1987: 212-216; Noguera 1945: 1-2). In the XVI century, Fray Alonso Molina defined *copalli* as '*incienso*' (incense) (Molina [1571] 1970]). Francisco Hernández, a physician who lived in Central Mexico during the XVI century and studied the flora of New Spain, noted that the term *copalli* was often used by the 'indians' to refer to any kind of gum. He also noted that the trees from which the resins of *copalli* came from were called *copalquahitl*, which means *copalli* tree. In reference to the copal tree Hernández, wrote:

> It is a tall tree with leaves similar in form and size to the ones of the oak, but longer, and with a rounded fruit of a purple colour, and with the taste of the gum that is distilled by the tree. The gum sometimes springs spontaneously and other times is caused by making incisions on the tree, it is specially named *copalli*, although for the Indians this term usually means any kind of gum so that the tree itself is called *copal quauitl*, that is, *copalli* tree (Hernández 1959: 176, translation mine)[61].

From the missionary and historian Francisco Javier Clavijero, who lived in Central Mexico during the XVIII century, we also learn about the resins of copal that: 'The trees from which they are distilled are of ten species, that differ more than in their name, in the shape of their leaves and their fruit and in the quality of the resin (...). The copal par excellence is a white and transparent resin that is distilled from a large tree' (Clavijero 1945: 110, 103, 104, translation mine) [62].

10.3.2.5. The extraction of copalli

A sixteenth century reference to the extraction of *copalli* can be found in the *Memoriales o Libro de las Cosas de la Nueva España y de los Naturales de ella* written by the Franciscan friar Toribio Paredes, also known as Motolinía. Motolinía referred to the method of extraction of *copalli* by incision and also noted that the trees from which *copalli* was extracted grew in hot climates. According to the author *copalli* 'is like a white resin, that is raised in some trees in the hot lands, that when punctured for the gum or resin to be distilled, comes out from this in abundance on some large leaves on which it curdles' (Benavente [1568] 1971: 67, translation mine)[63].

---

[58] The passage is 'Criaban mucho el árbol del incienso para los demonios, y sacábanselo hiriendo con una piedra el árbol en la corteza para que allí corriese aquella goma o resina, es árbol fresco, alto y de buena sombra y hoja, pero su flor hace negra la cera donde lo hay' (Landa [1590] 1978: 129).

[59] *Kik* is a term used for the sap of the rubber tree which literally means 'blood' (Landa 1941: n. 679).

[60] There may be an association between the incense called *chahalte* and the lords (Landa 1941: 140-141, 144).

[61] The original text is: 'Es un árbol alto con hojas semejantes a las de encino en forma y tamaño, pero más largas, y fruto redondeado color púrpura y con el sabor de la goma que el árbol destila. Mana esta goma a veces espontáneamente y otras veces se provoca haciendo incisiones en el árbol; recibe especialmente el nombre de *copalli*, aunque para los indios suele significar este vocablo cualquier género de goma, de suerte que el árbol mismo se llama *copalquáuitl*, es decir, árbol de *copalli*' (Hernández 1959: 176).

[62] The original text is: 'Los árboles que las destilan son de diez especies, que difieren mas que en el nombre, en la figura de sus hojas y de su fruto y en la calidad de la resina (...) El copal por antonomasia es una resina blanca y transparente que destila de un árbol grande (...)' (Clavijero 1945: 110, 103, 104).

Hernández also made reference to the product of *copalli* in the form of 'wide splinters' which would have resembled the bars of copal sold in markets in Central Mexico today and which was also found as offerings in Tenochtitlan (Lona 2004a: Fig. 13a): 'This liquid (...) is white and transparent and it curdles in the form of wide splinters' (Hernández 1959: 176, translation mine)[64].

10.3.2.6. The ritual use of copalli and its different forms

The importance of *copalli* in religious rituals in Mesoameria is reflected in a passage written by Fray Bernardino de Sahagún in the Florentine codex during the XVI century. The author wrote that: 'The incense or copal that was offered, was used by these mexicans, and all [people] of the New Spain, a white gum that they call copalli, that is also used nowadays very much, to incense their deities (…). This incense was used by the rulers (*satrapas*) in the temple, and all the other people in their houses, as it was mentioned above' (Sahagún [1590] 1988: 189, translation mine)[65].

Copal was made in several forms. We learn from Sahagún ([1590] 1978: 127) of the existence of [pieces of] incense, quite round, conical [in shape] with quetzal feathers erected on their points[66]. From the Codex Mendoza we also read that balls of unrefined copal and balls of unrefined copal wrapped in palm leaves, as well as baskets with white copal, all to be used as incense, were part of the tribute goods paid to Moctezuma (Berdan and Anawalt 1992, Folios 36r and 35v). Also recorded in Colonial documents is the use of *papel copal* (copal paper) (Torquemada 1976: 95).

10.4. THE USE OF RUBBER AS INCENSE

A different kind of incense used in the Maya area and in other parts of Mesoamerica was rubber or *hule*. The material for most Mesoamerican rubber with which offerings and other artefacts were made has commonly been identified as a latex acquired from the *Castilla elastica* tree (Hosler *et al*. 1988, 1999; Landa 1941: 142 n.679; Stone 2002: 22; Tarkanian and Hosler 2000: 55) although it can be obtained from many species of plants, and even some Dandelions (Semegen 1973: 152). *Castilla elastica* is endogenous to the tropical lowlands of Mexico and Central America (Tarkanian and Hosler 2000: 55).

Rubber was widely used in ritual offerings in Mesoamerica. Attesting to the use of rubber in the Maya area during pre-Hispanic times are the archaeological specimens in the form of balls, sometimes also with copal, and human figures recovered from the Cenote of Sacrifice at Chichen Itza (Coggins and Ladd 1992: 353-356, Figs. 9.13 and 9.14). In representations of Maya art, rubber offerings have been identified as spiral motifs in Postclassic Maya codices (Lounsbury 1973) where they are sometimes represented with a feather as well as the mat sign on top (Stone 2002: 24-26; Fig. 11). The spiral motif is often represented in the flanges of cylindrical censer stands, perhaps as part of the paraphernalia associated with incense burning (Figure 106). Other motifs commonly represented in flanges are knots, the mat sign, feathers and the *pom* glyph, all of which are associated in Maya Postclassic codices and other forms of Maya art with the burning of incense. Serpents (sometimes feathered serpents) are also commonly represented in flanges and may also have been a form of incense (Section 10.7.3.).

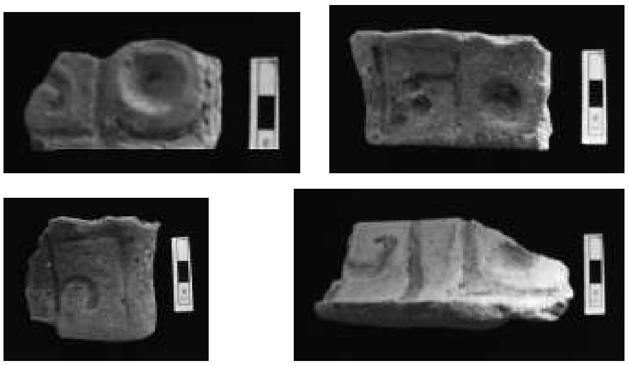


Figure 106 Possible representations of a spiral motif in fragments of flanges of incense burners from Yaxhá

Ethnohistoric records in the Maya area identify rubber as *kik*, which literally means 'blood' (Barrera Vásquez 1980: 399). The use of balls of a sap or resin called '*kik*' as offerings in rituals was recorded by Fray Diego de Landa in Colonial times (Landa 1941: 142). The practice of burning rubber balls as incense has continued till modern times by the Lacandones who are also known to have burned ceremonial figures made of rubber (Bruce 1973: 25-34; Tozzer 1907: 102).

The name for rubber in Nahuatl was *ulli*[67]. Human figures spattered with rubber were recovered in excavations from the Temple of Tenochtitlan and nearby buildings (Lona 2004a). Colonial references about the use of *ulli* in Central Mexico are numerous. Rubber was used as burnt offerings on paper (Benavente [1568] 1971: 66), as well as in the form of balls (Durán [XVI century] 1967: 486) as in the Codex Mendoza where balls are represented by a black pellet covered by a lighter colour circumference which may represent white copal (Berdan and Anawalt 1992, Folio 46r). We also learn that among the tribute paid or to be paid to Moctezuma by some of the provinces conquered by the Mexica were: 'formas de hombre de hule' (forms of rubber men) or 'estatuas de hombre de hule' (rubber statues of men), and 'panes de hule' (loaves of rubber) (Rojas 1997).

---

[63] The original text is: '(...) es como una resina blanca, que se cría en unos árboles en tierra caliente, a los cuales punzándolos para que destile esta goma o resina, sale de ello en cantidad sobre unas pencas grandes, sobre las cuales se cuaja (...)' (Benavente [1568] 1971: 67).

[64] The original text is: 'Dicho líquido (…) es blanco y transparente, y se cuaja en forma de astillas anchas (…)' (Hernández 1959: 176).

[65] The original text is: 'Del ofrenda del incienso o copal usaban estos mexicanos y todos los de Nueva España de una goma blanca que llaman copalli, que también agora se usa mucho, para incensar a sus dioses. (...) Deste incienso o copal usaban los [sá]trapas en el templo, y toda la otra gente en sus casas, como se dixo arriba' (Sahagún [1590] 1988: 189).

[66] The original text is: 'Otros ministros llevaban en brazos unos pedazos de copal hechos a manera de panes de azúcar, en forma pyramidal. Cada uno destos pedazos de copal llevaba en la parte aguda una pluma rica que se llama quetzal, puesta a manera de penacho. Llamaban la esta pluma *quetzalmiya huáyutl*' (Sahagún 1978:127).

[67] Fray Alonso de Molina defined *olli* as 'cierta goma de arboles medicinal, deque hazen pelotas para jugar con las nalgas' (Molina 1970:76).

10.5. THE USE OF XPUHUC AS INCENSE

Another form of incense used in the Maya area and in other parts of Mesoamerica is a herb identified as *Tajetes lucida* o *Tajetes florida* from the family of the Compuestas or Asteracea. The herb, which is usually identified by its yellow flowers, is indigenous to Mexico, Guatemala, and Honduras.

It is identified in various parts of Mesoamerica under different names[68]. In the Maya area, it is called *xpuhuc* by the Yucatec Maya, *yiá* by the Quiche, *tzitzak* in Tzeltal, and *tumusáli* among the Huicholes (Sierra Carrillo 2000: 5). The herb is still used as incense by the Choles who refer to it as *Hierba de Santa María* (Pérez Chacón 1988: 139), and the Tojolabales who call it *pericón* (Campos 1983, as cited in Garza 1990: 272).

The Nahuatl name of the herb is *yauhtli* (Garza 1990: 82; Sierra Carrillo 2000) which is defined by Remí Simeón (1977) as '[*p*]*lanta que tiene el olor y el sabor de anis; se la echaba en el fuego en ves de incienso*' (plant that has the smell and the taste of anis; it was thrown in the fire instead of incense). The herb is known in modern Mexico by several Spanish terms including *pericón*, *San Miguel*, *periquillo*, *yerba anis*, *flor de Santa María*, *yerba de nubes* (Garza 1990: 82), and also *hierbanis* and *hierba de San Juan* (Sierra Carrillo 2000: 5).

The use of *yauhtli* in religious rituals is recorded in Central Mexico during the Colonial period in the work of the Franciscan friar Bernardino de Sahagún, from which we learn that *yauhtli* was used dried and then ground as incense, sometimes carried in a bag or haversack (Sahagún 1979: 166-167). Reference to the burning of *yauhtli* in a ladle censer is also made by Sahagún ([1590] 1988: 167). We also learn that *yauhtli* was used as an offering to be burned together with paper, copal, and rubber (Sahagún 1979: 249).

10.6. THE USE OF BEESWAX AND HONEY AS INCENSE

Another type of incense likely to have been used in pre-Hispanic Yucatan and perhaps in other parts of the Maya lowlands is bee resin and wax produced by stingless bees (Jong 1999: 53-54). Since pre-Hispanic times, the Maya have kept bees in log hives, which consist of hollow sections of trees closed on the ends with wooden or stone disc-shaped stoppers and with an entrance hole made midway between the ends. Hundreds of stoppers have been excavated from various archaeological sites in the northern and central Maya lowlands with dates ranging from the Late Preclassic to the Late Postclassic period, a list of which is presented by Crane and Graham (1985: 24-28, Table 3)[69].

The presence of domesticated or cultivated bees in Yucatan as well as in what are now Guatemala, Honduras, El Salvador, Nicaragua and Costa Rica is referred to in various Colonial documents. The *Relaciones Histórico-Geográficas de la Gobernación de Yucatán 1579-1581* (Mérida, Valladolid, y Tabasco) indicate that honey was one of the Yucatan Peninsula's few resources during the Colonial period and that it was produced in much larger quantities than in other parts of southern Mesoamerica (Garza *et al*. 1983). In particular, Cozumel and Chetumal were important centres of honey trading (Fernández de Oviedo y Valdés 1959; Pagden 1972).

Meliponiae bees, also called 'stingless bees' which are native to the region, collect honey and pollen in pots of cerumen. Cerumen is the prime construction material of the Meliponiae bee nests and consists of a mixture of whitish wax and plant resins collected by the bees called *propolis*. The bees also use masticated vegetal matter, animal and human faeces, and artificial materials including tar in nest construction. The colour of cerumen is caramel to dark brown and when freshly made it is soft and malleable (Michener 1974). The chamber of the brood takes the form of a 'concentric array of horizontal combs consisting of cells for individual bees' (Jong 1999: 372, Fig. 1).

10.6.1. The modern use of beeswax as incense

During 2004 I visited the Museo de la Isla de Cozumel in the Island of Cozumel, off the Yucatan east coast. In the museum I was able to visit an exhibition of a Maya household where, for educational purposes, an exhibitor showed to the visitors the different elements which typically composed a Maya household. On this occasion, I took the opportunity of asking the exhibitor if she could show me incense. The exhibitor showed me a fragment of a beehive and told me that the fragment was incense.

With this antecedent, during my fieldwork in Tikal, I decided to burn a fragment of a dried beehive in order to learn about the combustion of bee wax and resin with the aid of Don Beto Tezukun, who, among other roles, was the person in charge of the Bodega of Tikal (Figure 107). The experiment revealed that the beehive fragment was very combustible. It burned with a constant flame and produced a very sweet and pleasant smell, as well as multiple curving scrolls of smoke.

Further research into this matter at the British Library allowed me to learn that Harriet de Jong, has recently recorded the use of resins from beehives in the *U Hanli Kab* ceremony for the gods of the stingless bees (Jong 1999: 182-184; Fig. 5.1) and the *U Hanli Kool* ceremony for the corn field (Jong 1999: 225-227) in the *ejidos* of Tepich and Xmaben in Yucatan. The beeswax in these ceremonies is referred to as *chal* and is burned as incense.

---

[68] The herb is also known as *yita pericó* in Mixtec, *mikua* in Otomi and *guía laga-zaa* in Zapotec (Sierra Carrillo 2000: 5).

[69] Several of these sites are located in Cozumel Island and include Aguada Grande, Buena Vista, and San Gervasio. Other sites are Tulum and Mayapan in Mexico, Chan Chen, Cerros, Santa Rita Corozal and Barton Ramie in Belize, and Uaxactun and Altar de Sacrificios in Guatemala.

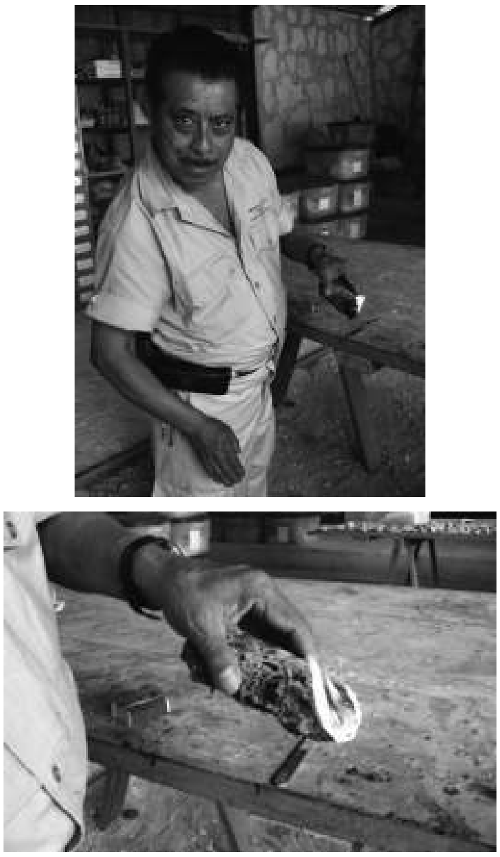


Figure 107 Don Beto Tezukun in the Bodega of Tikal holding a lighted dried beehive fragment

According to Barrera Vázquez (1980: 81), *chal* is the resin placed by bees on the cracks of the beehive. In fact, in the Diccionario de la Lengua Maya, *chal* is defined as 'resin laid by the bees in the cracks of the beehives to cover them or to intercept light' (Alvarez 1980: 279, translation mine)[70]. In the Vienna Spanish-Mayan dictionary *chal* is also defined as '*Copal, Ynçienso de las Indias: pom. Quemado: u Chalil pom*'[71].

The modern use of beeswax has also been recorded by Wilson as an offering to the *tzuultaq'as* in a cave ritual conducted by Q'eqchi people in Alta Verapaz, Guatmala. In this instance, beeswax was used as part of an offering which, according to the author, also included *pom*, candles, maize products, turkey blood, alcoholic drinks (*b'oj*), pine torches dipped in blood, and blood (Wilson 1995: 140).

The same author also recorded the burning of a human figure called *muñeek* (doll) made of *pom* and beeswax – as expressed by Wilson- by Q'eqchi people in a curation ritual in the same area. The ritual involved uniting the dissociated spirit of an afflicted person with its owner (Wilson 1995: 150).

During my fieldwork at Tikal, I interviewed a priest named Gilberto Chayax Huex born in San José, Peten. Don Gilberto told me that his grandparents were from San José while his great-grandfathers came from Yucatan. As a result, he identified himself as both Itza and local. Don Gilberto explained to me that he remembered that his great grandparents used to make balls of beeswax with a thick thread (*hilo grueso o pabilo*) inside. He explained that his great grandparents 'made a hole on the ground, and dripped the copal resin there until it hardened and they would [then] take it out'[72]. In this process, they would place three small sticks in the ground, two vertically and one horizontally. To the horizontal stick they attached the thread (*hilo*). They would then pour the resin till it thickened (Chayax Huex, personal communication 2006).

10.6.2. The colonial use of beeswax/honey as incense

Fray Diego de Landa referred to painted figures of honey used as part of an offering of incense during a celebration made by the owners of hives of honey. He wrote: 'They made many offerings and especially they gave to the four *Chacs* four plates with pellets of incense in the middle of each one and painted all around some figures of honey, since the feast was conducted in order to obtain its abundance' (Landa 1941: 157)[73].

A colonial reference to the use of copal covered by 'sugar' is referred to by Russell (1947) and Aguilar (1991: 56-57) as cited in Salinas Guevara and Castellanos Dounce (2004: 9). The text supports the idea that the use of 'sugar', which could be interpreted as curdled honey[74], together with copal in offerings was not alien to at least some parts of Mesoamerica during colonial times. Reference in this document is made to the 'soft odour' that sugar produces when burned with *copalli.* In reference to *copalli* the document reads: 'it is a white and transparent and very odorous resin a Copalli with which the natives perfumed their idols that served as incense, it is a *tramento* [?] very eye-catching that is white and transparent and they shape it in such a way that it resembles loaves of *tacitron* [?], covered by sugar it has a very mild smell that our [people] have bought it (...) (Russell (1947) and Aguilar (1991: 56-57) as cited in Salinas and Castellanos' (2004: 9)[75].

Yucatecan Early Colonial dictionaries contain information about the manufacture and use of beeswax for candles

---

[70] 'Resina que ponen las abejas en la hendidura de las colmenas para cubrirlas o para interceptar la luz' (Alvarez 1980: 279).

[71] In this definition, *chal* may generally be defined as incense, the word copal meaning incense.

[72] Here again, the term copal seems to be used as a synonym for incense in the context of a conversation that was about beeswax. Don Gilberto's words were 'hacían un hueco en la tierra, ahí chorreaban la resina de copal hasta que se endurecía y la sacaban'.

[73] The original text is: 'Hacían muchas ofrendas y en especial daban a los cuatro chaces cuatro platos con sendas pelotas de incienso en medio de cada uno y pintadas a la redonda unas figuras de miel, que para la abundancia de ella era esta fiesta' (Landa [1590] 1978: 96).

[74] Yucatecan dictionaries indicate that the term 'sugar' was used by Spanish people to refer to curdled honey. In the Diccionario de Viena Español Maya the word *u mom cab* is defined as 'azucar, miel cuajada de esta tierra'. *Mom cab* is defined in the Diccionario de Motul edited by Domingo Paredes, 1929 and the Diccionario de la lengua Maya, Juan Pío Pérez, 1866-1877 as 'azucar de miel de abejas'; and *u mom-il cab* is defined in the Diccionario de Viena Español-Maya as 'miel cuajada o hecha azucar'.

[75] The original text is: 'es una resina blanca y transparente y olorosisima con el cual Copalli perfumaban los naturales a sus idolos que les servía de encenso, es una tramento muy bistoso que es blanco y transparente y lo forman de tal manera que parece tajadas de tracitron [?], cubierto de azucar es de muy suave olor que los nuestros lo han comprado (...)' (Russel (1947) and Aguilar (1991: 56-57) as cited in Salinas and Castellanos (2004: 9).

(*candelas or velas*) as well as the existence of beeswax in other forms. It is not always clear whether the objects defined in the dictionaries existed in pre-Hispanic times or not, but some of them are likely to have been pre-Hispanic.

In Yucatec dictionaries[76] '*cib*' is defined as *cera* (wax) which refers to beeswax. The *Diccionario de la lengua Maya* defines *cib* as *cera* (wax), as well as *vela* (candle), *candela* (candle), and copal (Alvarez 1980: 280). The Spanish translations of words or expressions which include *cib* in these dictionaries translate *cib* as wax[77]. Some terms in the dictionaries indicate the existence of pellets or balls of *cib*. From colonial Yucatec dictionaries we also learn that two terms existed for balls of beeswax: *uol-ol cib* and *uol iz cib*. In the *Diccionario de Motul Maya-Español* from the John Carter Brown collection *uol-ol cib* is defined as '*pelota o pela de cera*' (ball of wax) and in the *Diccionario de Viena* Español-Maya *uol iz cib* is defined as '*cera en pelota*' (wax forming a ball) (Alvarez 1980: 281). The word *p' ix-lim cib* is defined in the Diccionario de Motul Maya-Español from the John Carter Brown collection as '*cierta derrama o contribucion de pelotillas de cera que dan los indios cada uno; la cuya de valor de veinte cacaos para candelas para la iglesia o para hacer algo y contribuir* (Alvarez 1980: 288)'. We learn from this definition that small beeswax balls were given by indigenous peoples as a contribution or apportionment for candles in the church and possibly other purposes. Given the existence of balls made of copal and rubber in pre-Hispanic times, and the use of bee products as incense based on the above colonial, ethnohistoric and ethnographic documents, it seems plausible that balls made of beeswax were also used as incense in pre-Hispanic times. People from Yucatan may have already been familiar with the manufacture of beeswax in this form at the time of Spanish arrival and contributed beeswax in the form of balls in Colonial times. As was the case with the rubber and copal balls, people may have also used balls of beeswax as incense in rituals in pre-Hispanic and Colonial times.

Beeswax was also made in colonial times in the form of long and large loafs, as indicated by the term *chem cib* defined in the *Diccionario de Viena* Español-Maya as 'cera en panes largos y grandes' (wax in long and large loaves). The same term is defined in the *Diccionario de Motul* attributed to Fray Antonio de Ciudad Real and the *Diccionario de Motul* Maya-Español as '*cera derretida y fundida en panes largos*' (wax melted and smelted in long loaves) (Alvarez 1980: 281). We also know that beeswax was also made 'in round loafs like plates', as can be learned from the term *lac-il cib* defined in the *Diccionario de Viena* Español-Maya as '*cera en panes redondos como platos*' (Alvarez 1980: 281).

10.6.3. Beeswax and/or honey in the Madrid codex

The melting of what could be beeswax and/or honey as an offering is also recorded in the Madrid Codex believed to be Yucatec in origin. Pages 103 to 112 of the codex refer to bee-keeping tasks and rituals and contain representations of deities with bees, hives, offerings and sometimes spiked incense burners. According to Ciaramella (2002), the rituals in these pages involve actions which include propagating hives, harvesting honey, sweeping under hives, depopulating hives, making offerings, and melting or burning incense.

In pages 103c(3)-104c(4) (Figure 108) and 108c(3) of the codex, deities are represented carrying yellow square pellets which appear to be bee resin and wax taken directly from log hives and arranged in rows on a container. In particular, on page 110b(2) (Figure 109), a deity is represented in front of a burning spiked incense burner. The text of the ritual represented in this page makes reference to the melting (*yib*) of *u kab* which is translated in this context as 'his honey' (Ciaramella 2002) but which is a word that could also mean bee or beeswax. Two definitions of *kab* in the Swadish Spanish-Mayan Dictionary are *goma* and *miel.* In the Roys Mayan-Latin dictionary, one of the definitions of *kab* is sap. In the Motul Mayan Spanish dictionary *u Kaab che* is defined as 'lágrima, leche o goma líquida que destilan los árboles' (tear, milk or liquid gum that is distilled by trees). In the same dictionary, *u kaab cab* is defined as *miel* and *u kaab cib* as 'miel de la cera' (honey from wax). Thus, the pages refer to the melting of honey and/or beeswax on a spiked incense burner.

10.6.4. Archaeological evidence of the use of beeswax/honey as incense

An archaeological example of a censer from Cozumel Island dated to A.D. 1400 held by the Museo de Merida in Mexico has an effigy representation of what was identified as the Maya bee deity, *Ah Mucan Cab*, which has the representation at the sides of the vessel of log hives with central flight holes and end closures (Crane and Graham 1985: Fig. 16) (Figure 110). The effigy carries in its hands what seems to be resin and/or wax with a shape and arrangement similar to the objects or substances carried by deities in front of incense burners in the pages previously referred to in the Madrid codex (Crane 1983, Figs. 53 and 54).

Late Postclassic pedestal based censers with a standing effigy attached to the front of a pedestal based container similar in form and style to the censer from Cozumel often carry offerings in their hands, many of which appear to be incense (Russell 2000: Fig. 26d; R.E. Smith 1971: Fig. 67a; J.E.S. Thompson 1957: Figs. 3a, b)[78]. The identification of some of the offerings carried by these effigies as incense supports the idea that the offering carried in the hands of the effigy from the Cozumel censer could also have been the representation of an offering of incense, in this case in the form of beeswax or beeswax and honey.

That the offering in the Cozumel censer could be incense is also supported by the presence of the

---

[76] Dicionario de Motul, atribuido a Fray Antonio de Ciudad Real edited by Domingo Paredes, 1929; Diccionario de Motul Español-Maya of the John Carter Collection; Diccionario de Motul Maya-Español of the John Carter Collection; Diccionario de la lengua Maya, Juan Pío Pérez, 1866-1877, Mérida, México; and the Diccionario de Viena Español-Maya.

[77] Information from early colonial dictionaries indicate that candles were made of sebo (tallow) as well as beeswax in colonial times in Yucatan. *Cib* is a term translated in Spanish as wax in several words in the dictionaries and is different from *tzatz* which is translated in several words as *sebo* (tallow) which was widely used in Europe during colonial times. *Yibak tzazt,* for instance, is defined in the Diccionario de la lengua Maya, Juan Pío Pérez 1866-1877 as 'vela de sebo' while *Yibak cib* is defined in the Diccionario de la lengua Maya as '*vela de cera*'.

[78] Among the offerings carried by the effigies are representations of balls which appear to have been similar in size to the 'copal' balls recovered from Tikal Structure 5D-1 (Adams and Trick 1961, Figs. 40b, c).

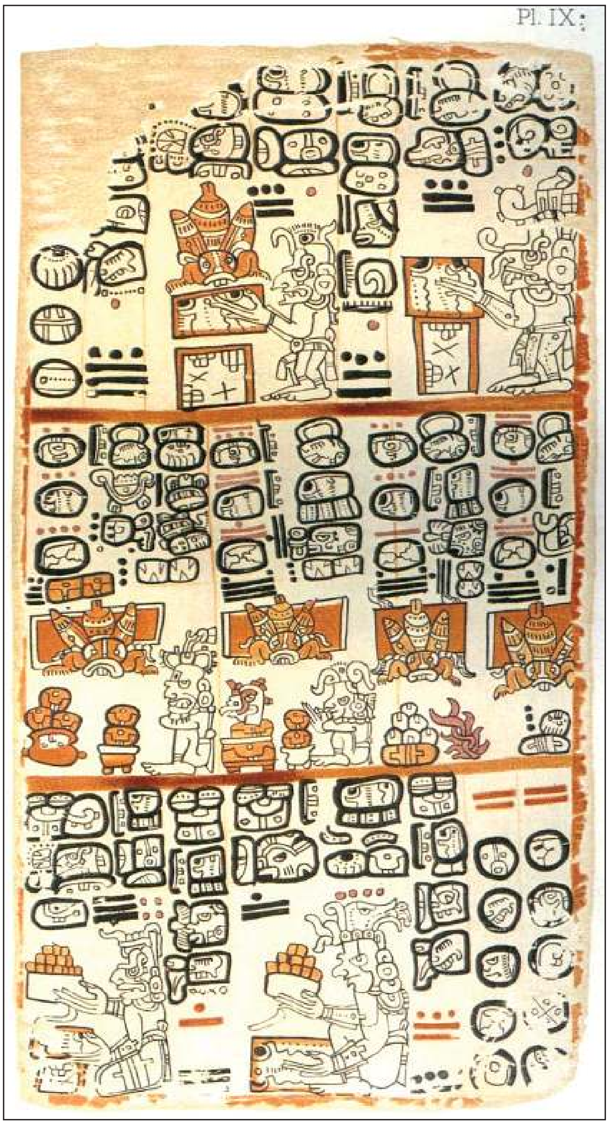


Figure 108 Codex Tro-Cortesianus (The combined Brasseur de Bourbourg and Leon de Rosny, Madrid Codex) © Foundation for the Advancement of Mesoamerican Studies, Inc., www.famsi.org

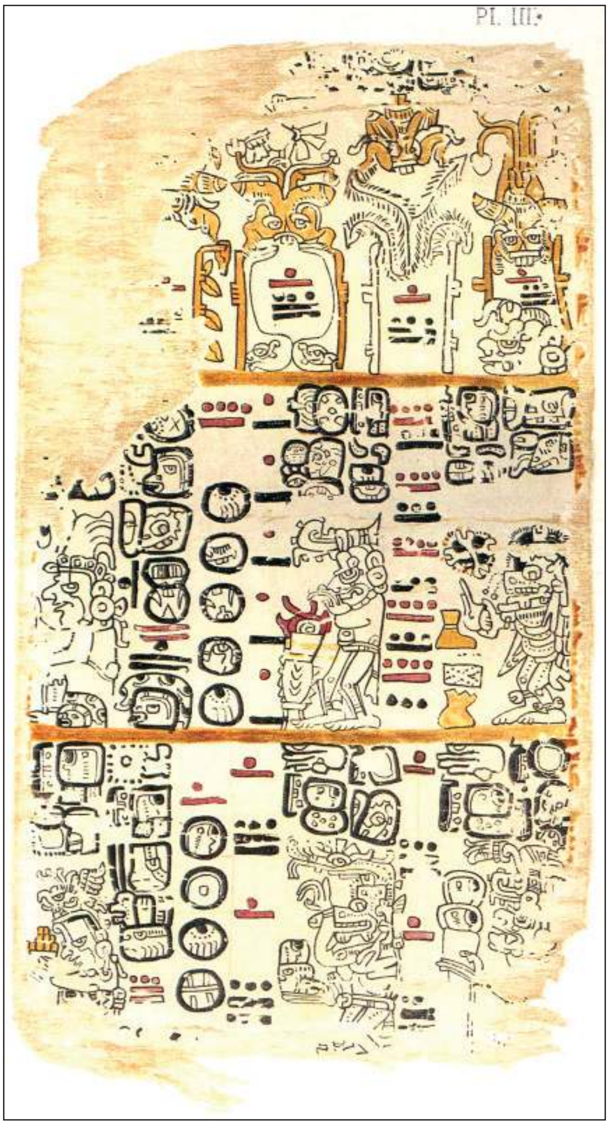


Figure 109 Tro-Cortesianus (The combined Brasseur de Bourbourg and Leon de Rosny, Madrid Codex) © Foundation for the Advancement of Mesoamerican Studies, Inc., www.famsi.org

cross sign in the censer's pedestal, located below the offering. Alfonso Caso associates the sign of the cross with the fire God in relation to the four cardinal points, as represented in the priests of this deity as well as in *temaitl* censers of Central Mexico (Caso 1958: 38). Based on Caso, Salinas and Castellanos (2004) suggest that the sign of the cross often represented on incense bags may also relate to the four cardinal points (Salinas and Castellanos 2004: 69)[79]. The sign of the cross is commonly represented across Mesoamerica on incense burners both in the containers and their lids and, interestingly, on log hives such as the ones represented in the Madrid Codex mentioned above. Modern log hives continue to be carved with a cross above the entrance holes in places such as the Tulum area of Quintana Roo (Luxton 1981: 136-139) and Chan Kom, Yucatan (Redfield 1934: 48-49). The sign of the cross may suggest an early

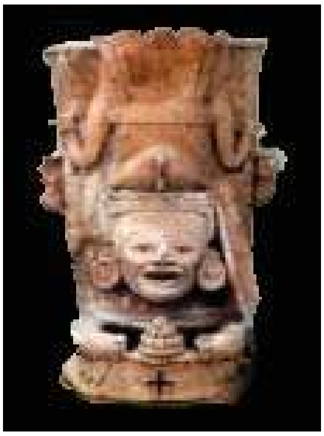


Figure 110 Censer with effigy representation carrying possible resin and/or wax from beehive. To the sides of the vessel are representations of beehive logs (photo: courtesy of Stephen Buchmann)

---

[79] Examples of incense bags with the sign of the cross can be found in the Códice Borbónico, Códice Aubin, Códice Mendocino, Códice Azuyu and others.

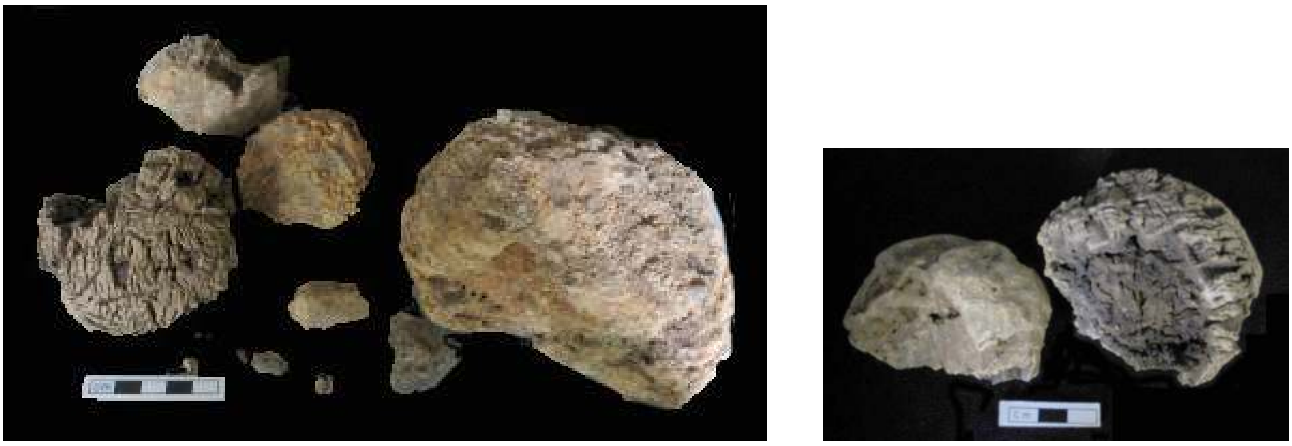


Figure 111 Fragments of yellowish resinous material together with a hand compressed ball of the same material and part of another ball made of a black material (unlabeled material from the Tikal Project excavations)

association of this sign with fire and/or the burning of incense.

A fragment of what initially seemed to me to be archaeological beeswax was stored in the bodega of Tikal together with two smaller balls, one of the same material and another one that was made of a black material excavated by the Tikal Project in an unlabeled bag (Figure 111).

In an attempt to clarify whether the material could have been beeswax from a native stingless bee (Meliponini), I contacted Dr. Stephen Buchmann, an entomologist who, on the basis of the photographs that I took of the material in the bodega of Tikal, indicated the following about the composition of the material:

> The lighter coloured pieces may be pure resin, like copal from Burseraceae. The two darker ones seem to be hand-compressed or distorted from the characteristic interior architecture of a stingless bee nest and they could be remnants of the interior wax and resin combs or honey/pollen storage pots from nests of Melipona Beechii or M. Yucatanica, or a Trigona species (Stephen Buchmann, personal communication 2007).

A sample of the material was submitted to chemical analysis by Dr. Brendan Derham at the University of Newcastle and the results suggested that the material was not part of a beehive (see Section E in Appendix, p. 155). My later observation of the incense offerings from the Cenote of Sacrifice at Chichen Itza, held at the Peabody Museum of Harvard University, also made me realize that most of the material from Chichen Itza had a similar yellowish colour and general appearance to the material stored at the bodega of Tikal, which is identified by Coggins and Ladd 1992: 353-356 as copal. Lona notes that *copal blanco* (white copal) is a semi-liquid material that, when dried, solidifies without being porous. When dried, the material changes to yellowish tones and develops a whitish cover in the surface. When the material deteriorates it becomes porous, and tends to have fissures and fractures (Lona 2004a: 259). Only Gas Chromatography and elemental analysis was conducted on the sample of the material discussed from Tikal (S14) (Gas Chrotography – Mass Spectrometry was not conducted). The sample was mainly organic but appeared as a very weak GC signal. What little was detected is similar to the modern sample A7 sold as Copal Blanco Hojas de Guineo Pom. There was other organic material present but could not be detected by the method used (Brendan Derham, personal communication 2008). The result of this sample is interesting in itself, and it can be argued that while it is possible that beeswax was used in pre-Hispanic times as incense, this is not supported by the material discussed here, found in the bodega of Tikal.

10.7. ARCHAEOLOGICAL SPECIMENS OF INCENSE FROM THE MAYA LOWLANDS AND CENTRAL MEXICO

10.7.1. Archaeological specimens from the Maya lowlands

The identification of archaeological resinous substances which are often found inside or in association with incense burner material as 'copal' is very common in excavation reports and publications from various sites in the Maya area. Identification is often made on the basis of a comparison of the appearance of the archaeological residues with known modern burned or unburned copal incense, as well as sometimes on the basis of the smell of the archaeological residues compared to that of modern specimens.

Most unburned specimens of incense from the Maya lowlands are generally dated to the Postclassic period, although due to their contexts some of the specimens' dating is often not secure, as is the case with the incense recovered from underwater contexts. An exception to this are the incense balls recovered at Cerros in Structure 4B-1st dated to end of the Preclassic or the beginning of the Classic period (Walker 1998: Fig. 8.10). Among the best preserved archaeological samples of incense in the Maya lowlands are the various offerings recovered from the water-filled limestone sinkhole, called the Cenote of Sacrifice, at the site of Chichen Itza in northern Yucatan. The offerings, which are believed to be Postclassic,

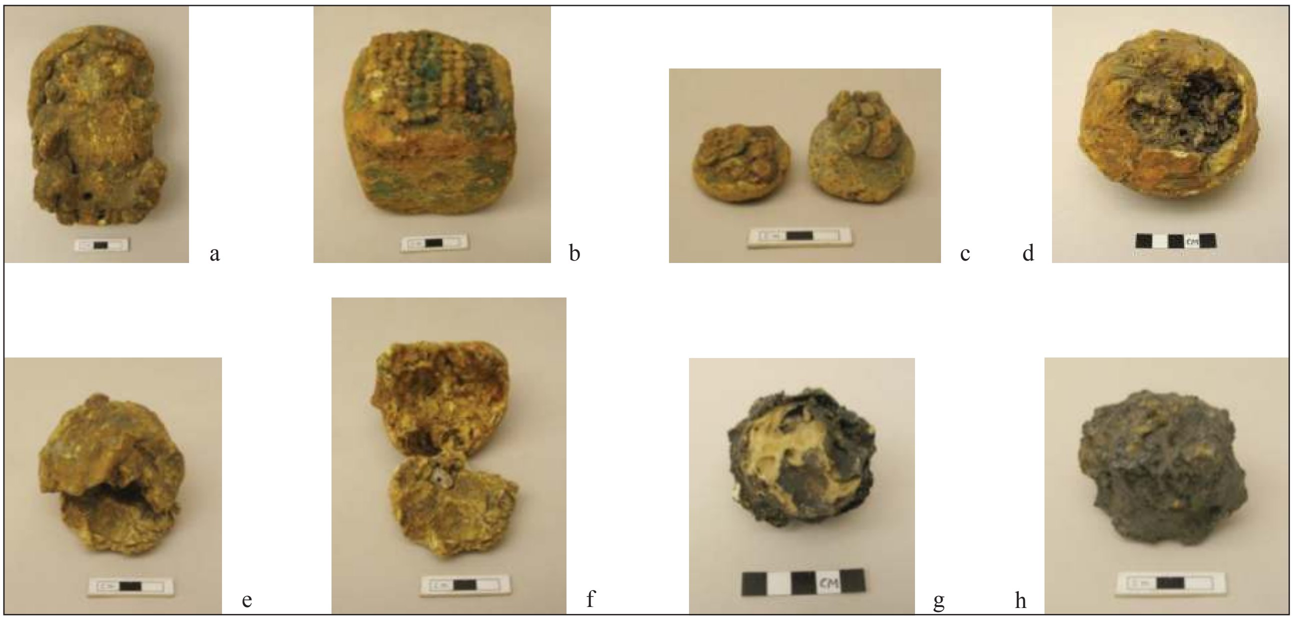


Figure 112 Incense recovered from the Cenote of Sacrifice in Chichen Itza (a) figure 07-7-20/C4654 (b) square-shaped specimen with nodules on top 07-7-20/C4655 (c) incense specimen with nodules on top 07-7-20 /C4634 (d) 07-7-20/ C4531 (e and f) 07-7-20/C4625 (g and h) incense found inside yellowish resin in tripod vessel 07-7-20//C4663 (photos: author, with permission of the Peabody Museum of Archaeology and Ethnology of Harvard University) © 2011 President and Fellows of Harvard College

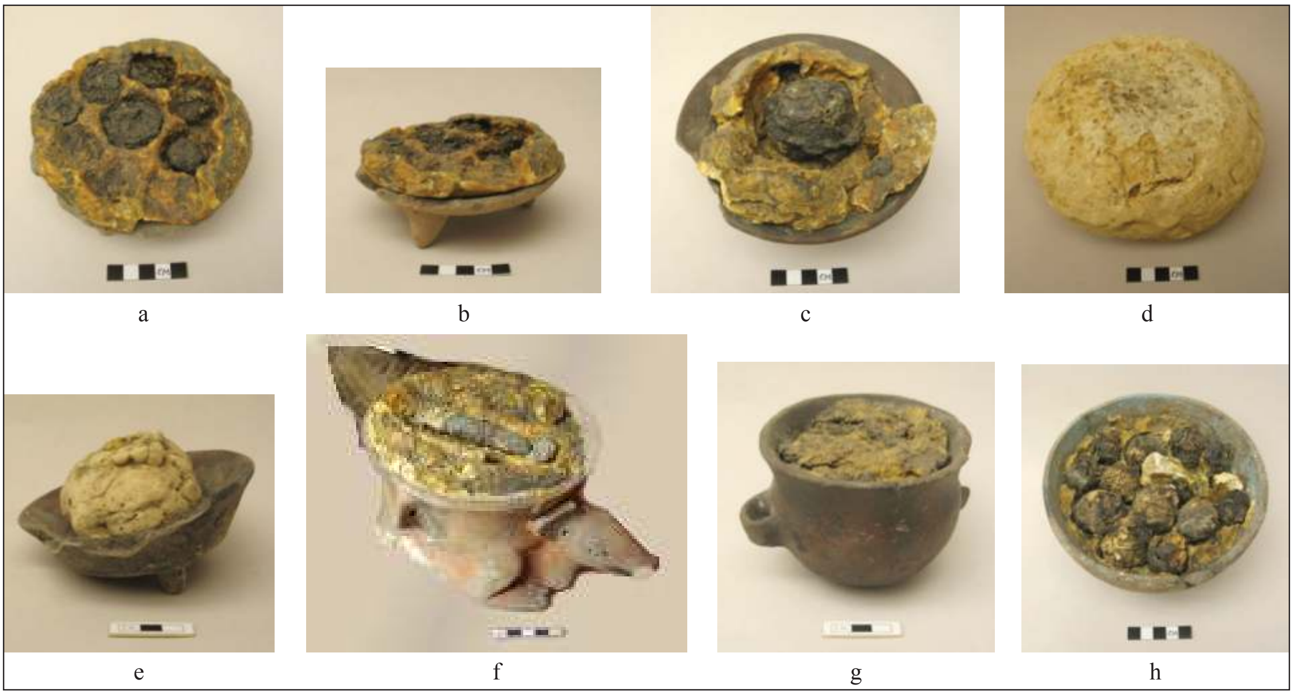


Figure 113 Incense recovered from the Cenote of Sacrifice in Chichen Itza Itza (a and b) 07-7-20/C4577 (c) 07-7-20/ C4663 (d) 07-7-20/C4609 (e) 07-7-20/C4553 (f) 07-7-20/C4541 (g) 07-7-20/C4547 (h) 07-7-20/C4544 (photos: author, with permission of the Peabody Museum of Archaeology and Ethnology of Harvard University) © 2011 President and Fellows of Harvard College

are identified as consisting mainly of copal, rubber, and possibly chicle with sometimes inclusions of jade and/or shell. Many were recovered inside tripod bowls and tripod dishes, while others were found outside containers in various forms including figures, balls, and round or square-shaped offerings with pellets on top (Coggins and Ladd 1992: 353-356) (Figures 112 and 113).

Other well preserved examples of incense are the blue painted 'copal' balls found in Cache 37 under the front of the step to Room 2 and close to a burial pit in Structure 5D-1-1st (Temple I) at Tikal. The specimens were dated to the Postclassic period (Adams and Trik 1961:123, Fig. 40b) (Figure 114).

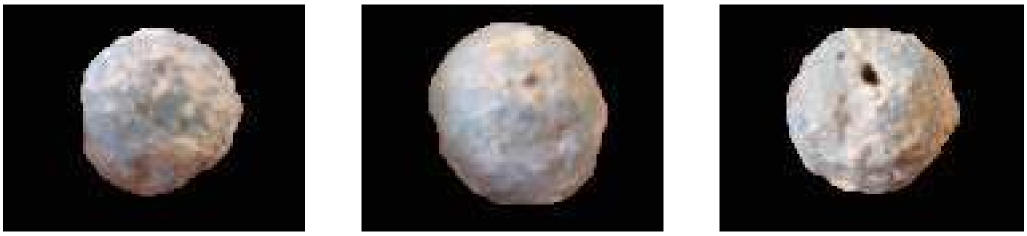


Figure 114 Postclassic blue painted copal balls from cache 37 under the front of the step to Room 2 and close to a burial pit in Structure 5D-1-1st, Tikal

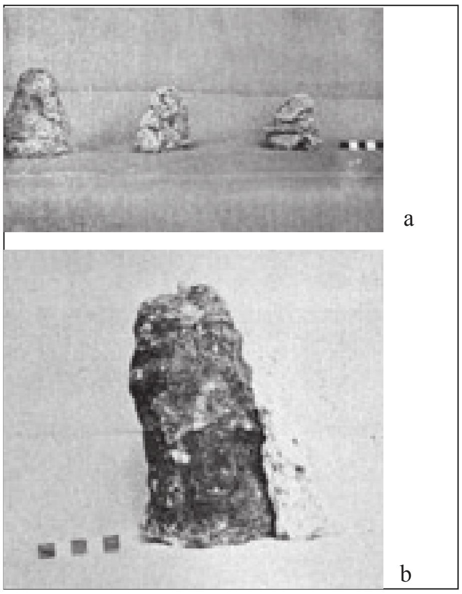


Figure 115 Incense from Cave Uchentzub in the Cayo District of Belize (after Schmidt 1976/77: Figures 5 and 6)

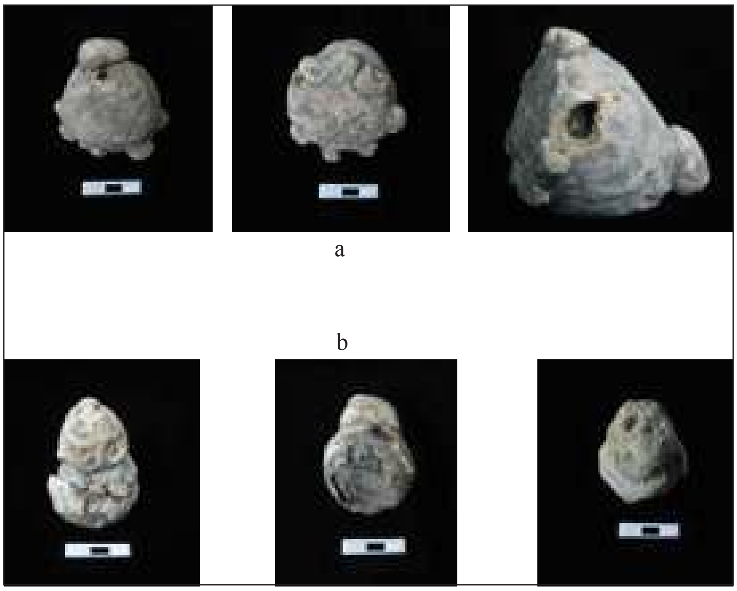


Figure 116 Incense from Structure 216-1 located in the east side of the East Acropolis of Yaxhá

Also in good state of preservation are the incense specimens recovered from the Uchentzub Cave (also known as the Agouti Cave) located five kilometres from Socotz, close to the western bank of the Macal River, in the Cayo District of Belize bordering the Department of Peten in Guatemala (Schmidt 1976/77). The specimens were dated to the Postclassic period on the basis of their associated ceramics (some of which consisted of pedestal-based incense burners decorated with spikes, disks and ribbons). They consist of conical lumps of incense with a hole in the centre of the top (Figure 115a) and another different kind of a conical shape (Figure 115b). The former were described as being 7 cm, 8.5 cm, and 10.3 cm high each, and having a spongy surface of a very light brown colour. One of them had traces of blue paint 'with a greenish tinge' on the outside. Another one was disintegrated in two parts and was described as having the same spongy, light brown appearance, and an inner core of dark grey to black material possibly consisting of rubber with a stick in its centre. The copal had several layers of the blue greenish tinge inside. The other kind of specimen (Figure 115b) was described as being 17.8 cm high, and was disintegrated into two parts, an outer layer of spongy, light brown copal and an inner core of dark grey to black material which is reported to have smelled like rubber when burned. The centre of the core material had a stick. Several layers of blue-greenish tinge were identified in the copal (Schmidt 1976/1977: 108-110). Interestingly, the specimen is similar in shape to pre-Hispanic conical lumps of copal recovered in the Nevado de Toluca (Figure 117, see Section 10.7.2.).

More recently, two incense specimens dated to the Middle Postclassic period (Isla ceramic complex) were excavated at the site of Yaxhá in structure 216-1 by the Proyecto Triángulo Yaxhá-Nakum-Naranjo (Figures 116a, b). The structure, located in the east side of the East Acropolis, consisted of a high, terraced platform with a stairway on the west side. The platform supported another platform on which stood a two-room corbelled vaulted temple. The two incense specimens were part of a Problematical Deposit which was found on the floor of the rear room of the structure. The stratigraphy was suggestive of the deposit having occurred when the building was already collapsing (Hermes *et al*. 1997: 255-307). The incense illustrated in Figure 116b is composed of a resinous yellowish material that has, on its surface, traces of paint on a thin whitish layer, and has a black ball of a shiny material inside. The specimen illustrated in Figure 116a also consists of a resinous yellowish material covered by a whitish layer with traces of blue-greenish paint. Also in this case, the material covers a black ball. The top of the specimen has a perforation. Its base has pellets arranged in a circle resembling the *pom* sign[80]. Samples of the yellowish and black material from the specimen in Figure 116b and a sample of the yellowish material from the specimen in Figure 116a were taken and subjected to gas chromatography-mass spectrometry by Brendan Derham at the University of Newcastle as part of this project. Analysis of the yellowish material (S17 and S18) from the specimens in Figures 116a, b suggests that they consist of the amyrin and amyronone compounds which were also present in a modern sample identified by the salesperson as *copal blanco, hojas de guineo pom* (Sample A7) (Figure 101c). Analysis of the black ball present inside the specimen in Figure 116b (S16) also suggests the presence of amyrin and amyronone compounds, an interesting result as often black balls inside of figures have been associated with rubber (see Section D of the Appendix, p. 144)[81].

10.7.2. Archaeological specimens from Central Mexico

Some of the best preserved specimens of incense from Central Mexico are the ones recovered from the two crater lakes of the Nevado de Toluca, a large stratovolcano located west of Mexico City, near the city of Toluca. Among the incense found in the lakes were copal cones of up to half a metre, specimens with the form of 'small volcanoes with one or two peaks', and copal spheres (Luna 2000: 47-49). Guzman (1972: 60) reported that some of the cones and spheres contain wooden splinters and maguey spines inside. Based on radiocarbon dates, the author suggested that some of the offerings are 1500 years old[82].

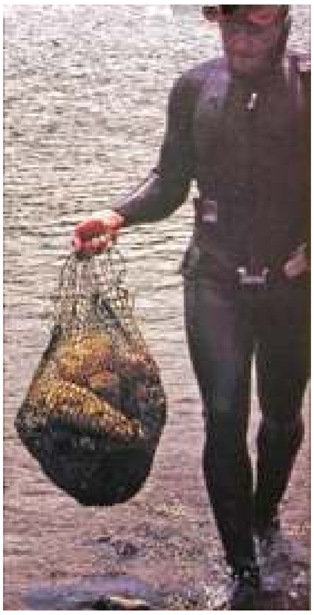
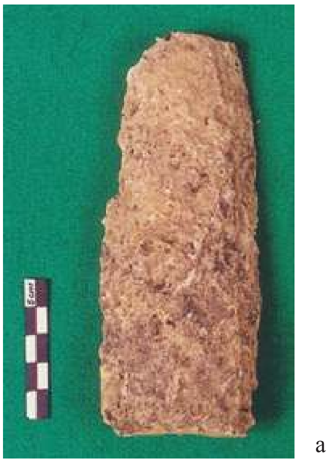


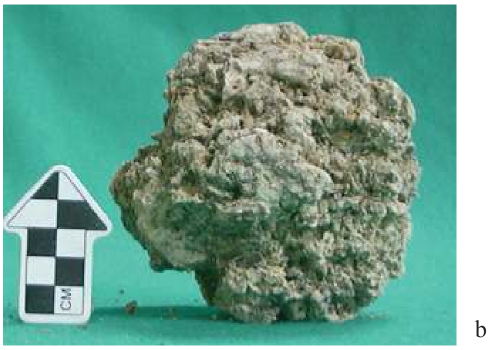
Figure 117 Incense cones recovered from a crater lake in the Nevado de Toluca (after Luna 2000:49)

Numerous copal offerings were also recovered from the Main Temple in Tenochtitlan and nearby structures. Lona has studied these offerings and suggests that they are composed of two kinds of copal: *copal blanco* (white copal) and *copal de goma* (gum copal) (Lona 2004a), both products obtained using the two extraction methods previously discussed (Section 10.3.1.5.). The offerings of *copal blanco* were made from copal resin in the form of *hojuelas* (flakes) or *en masa* (as a mass). *Copal blanco en hojuelas* (white copal in flakes), is still used today in Central Mexico, and according to an informant who sold it in Yecapixtla, Morelos it is formed when the maguey leaf is full and the resin drips from the leaf accumulating 'in the form of drops that elongate like stalactite or wax that drips (Lona 2004a: 167, translation mine)'. *Copal blanco en masa* (white copal as a mass), on the other hand, is white copal in a malleable state (Lona 2004a: 259).

The offerings from the Great Temple of the Aztecs in Tenochtitlan and nearby structures were classified by Lona into spheres, bars (Figure 118), conglomerates, anthropomorphic figures, and bases of knifes. Spheres were modelled and made of white copal *en masa*, white copal *in hojuelas*, and *copal de goma* (Figure 118). Spheres of copal in *hojuelas* were made with the addition of hojuelas in a concentric manner (Lona 2004a: 171-172, Fig. 46) while spheres of *copal de goma* were made with the addition of small copal pellets also in a concentric manner (Lona 2004a: 166, Fig. 45). A sphere of *copal de goma* is represented together with cornhusks in a Late Postclassic incense burner from Tlatelolco (Figure 119).



a



b

Figure 118 (a) Bar of copal blanco (white copal), unknown provenience, Museo del Templo Mayor (b) sphere of copal de goma (gum copal), Ofrenda X, Museo del Templo Mayor (photos: Naoli Victoria Lona)

---

[80] A similar specimen which does not have the *pom* glyph has been recovered at the Nevado de Toluca, a large extinct volcano in Central Mexico (Lona 2004a: Fig. 28).

[81] It is possible that these specimens resemble what Fray Diego de Landa ([1590] 1978:96) called pellets of incense covered by painted figures of honey (the yellowish material resembling honey) (see Section 10.6.2).

[82] It is possible that incense cones with wooden splinters or maguey spines inside where also used in the Maya area.

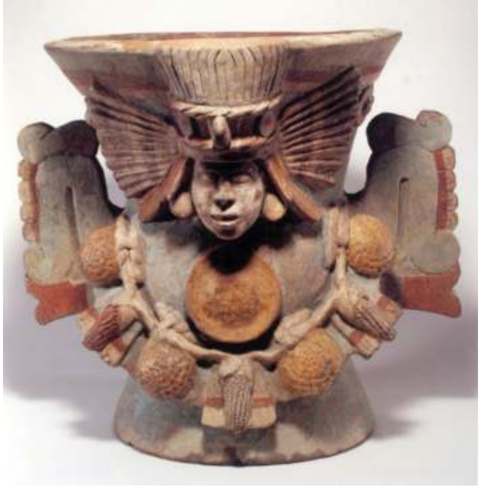


Figure 119 Late Postclassic effigy pedestal-based censer from Tlatelolco with spheres of copal de goma alternated with corn cobs (after López Luján 2004: 213)

Pre-Hispanic bars of *copal blanco* (white copal) are similar to the modern bars sold in markets in Central Mexico today (Lona 2004a: 59). The offerings classified as *conglomerados* (conglomerates) are described as being made of *copal de goma* in an amorphous form (found inside incense burners as well as outside as part of offerings) or in a truncated conical form. The anthropomorphic figures from Tenochtitlan were made in different ways; some had white copal *en masa* in their interior (Lona 2004a: 138-215).

10.7.3. Other possible forms of incense represented in Mesoamerican codices

Represented in the Selden Codex, a Mixtec screenfold manuscript, are brown elements with black dashes inside, sometimes in a conical form (Figure 120b) and other times in the form of a trunk with round protuberances coming out (Figure 120a). The element is represented as an offering, in some cases being placed in a ladle censer by individuals who also carry an incense bag (Selden p X-III, 3-1, II, 5-II, 11-II). According to Caso (1964: 26, 28-31, 39) the elements in the codex look like copal or copal dough, and Salinas and Castellanos (2004, Figs. 48, 49, 50) support this idea. A different interpretation has been made by Pohl (2002: 66), however, who suggests that the element represents tobacco. The conical element from Figure 120b may represent the conical incense specimen found in Cave Uchentzub in the Cayo District of Belize (Figure 115b) as well as the cones recovered in the Nevado de Toluca in Central Mexico (Figure 117). The identification of this type of offering is not clear.

Another element that could represent incense has the form of a flower and is represented in the codex Colombino-Becker (Caso 1966: 21, 22). In the Codex Bodley a flower of a similar form is associated with a

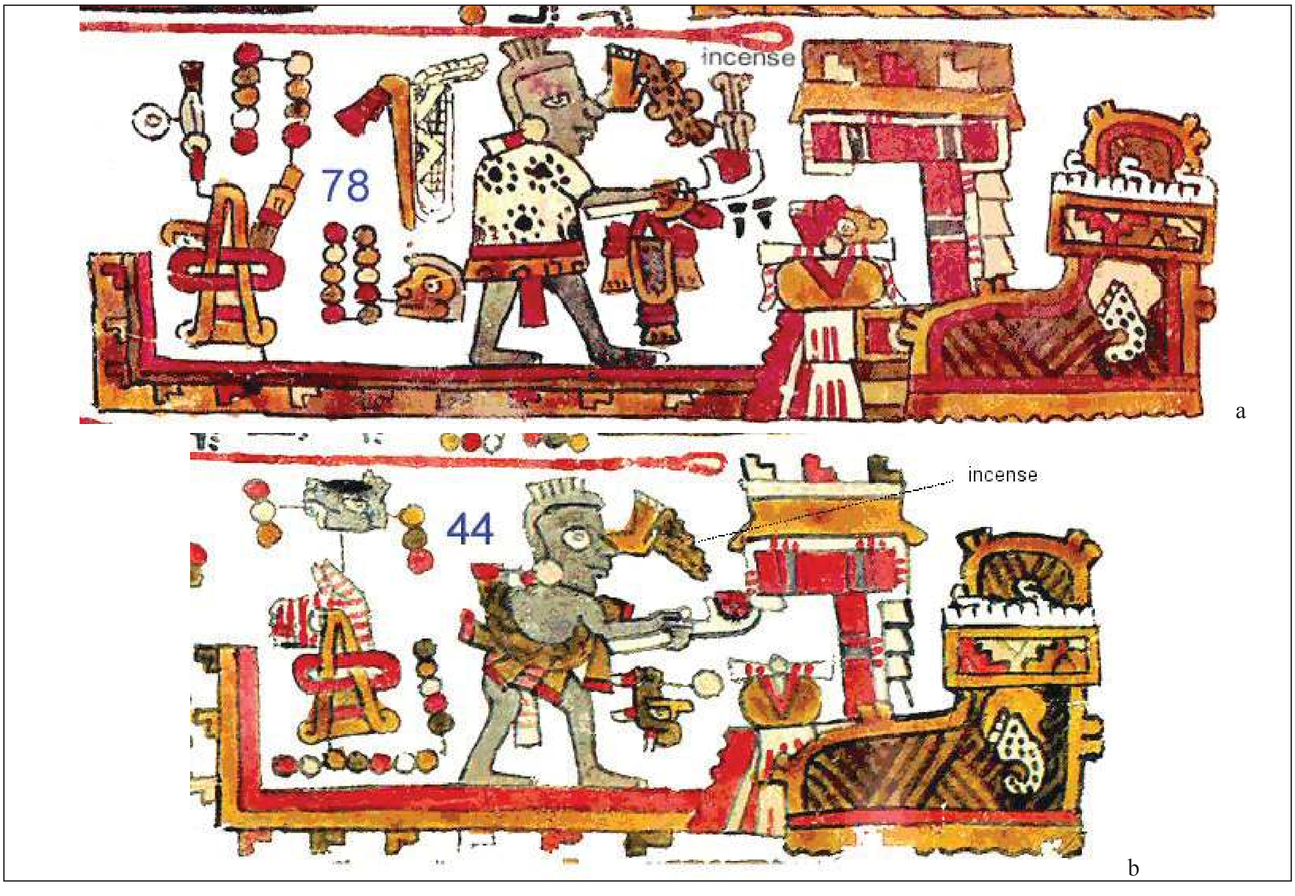


Figure 120 Representations of incense being placed on ladle censers (a) Codex Selden page 14 (b) Codex Selden page 9 (after John Polh's) © Foundation for the Advancement of Mesoamerican Studies, Inc., www.famsi.org

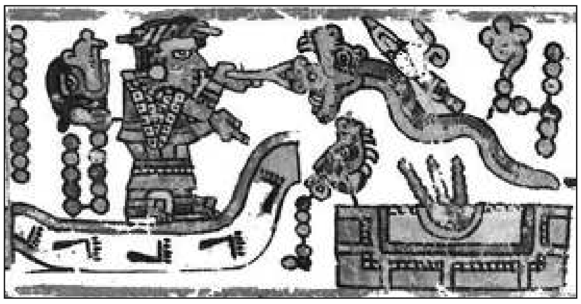


Figure 121 Possible representation of incense in the form of a flower perhaps on an incense burner from Codex Bodley 12-iv (after Jansen and Pérez Jiménez 2005) © The Bodleian Library, University of Oxford, M03.E05313

ladle censer (Figure 121). The motif has been identified by Alfonso Caso (1960: 40, 1966: 21, 22) as copal. Similar yellow flowers are represented twice in the Codex Mendoza as part of the tribute paid by the provinces of Tochtepec and Tlatlauhquitepec to the Mexica. One of the representations of the flower motif is in folio 46r where it is accompanied by a Spanish text that reads '*cien ollas o cantaros de liquidambar fino*' (one hundred pots or jars of liquidambar) and which is also referred to in folio 45v as '*mas cien ollas o cantaros de liquidambar fino*' (also one hundred pots or jars of fine liquidambar) (Figure 122a) (Berdan and Anawalt 1992, Folios 46r and 45v). The second representation of this motif is in folio 51r where it is accompanied by a text that reads '*ocho mil panes de xociocoçotl que es liquidambar*' (eight thousand loaves of liquidambar) and which is referred to in folio 50v as '*ocho mill panes o pellas de liquidambar para sahumerios / que llaman xochiocoçotl / todo lo qual tributavan de seys en seys meses*' (eight thousand loaves, or lumps, of liquidambar for incense/which they call *xochiocoçotl*—all of which they gave in tribute every six months) (Figure 122b) (Berdan and Anawalt 1992, Folios 51r and 50v).

'*Xochiocotzotl*' was defined by Fray Alonso de Molina (1970 [1571]) as '*liquidambar sahumerio*' (liquidambar incense), and the same author defined '*ocotzotl*' as '*resina de pino o trementina*' (pine resin or trementine). '*Xochiocotzoquauitl*' was identified by Hernández (1959 (1): 112-113, (2): 176) as the liquidambar tree.

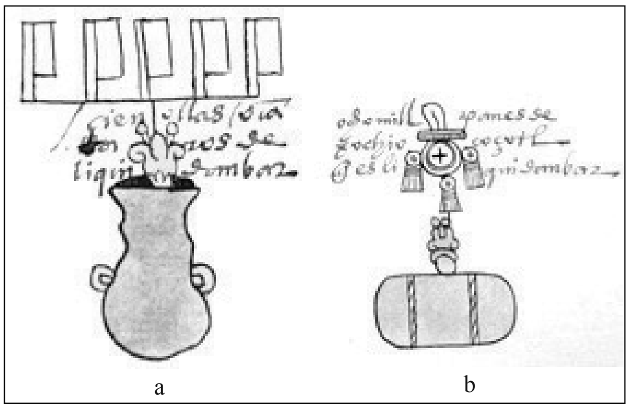


Figure 122 Representations of liquidambar (a) Mendoza Codex folio 46r (b) Mendoza Codex folio 51r (after Berdan and Anawalt 1992)

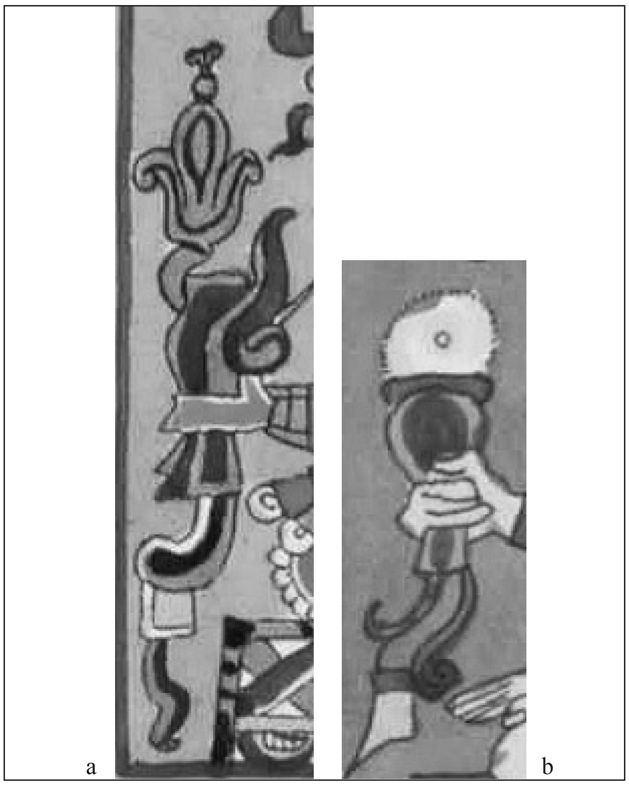


Figure 123 Incense represented in the Dresden codex possibly associated with torches (a) with the representation of a flower in page 49 of the codex (b) with the representation of a pom glyph in page 48 (after J.E.S. Thompson 1972)

A similar green flower is also represented in the Maya Dresden Codex in association with what appears to be a container used as a torch (Figure 123a). A similar container is represented in the codex in association with a pom glyph (123b). Although a symbolic association between flowers and incense in general may exist, it is possible that the illustration of the flower in the Dresden Codex –and perhaps in the Codex Colombino-Becker and the Codex Bodley— was a representation of incense, perhaps a specific kind of resin, as appears to be the case in the Florentine Codex. A possible association may even exist among the flowers represented in the Dresden, Colombino Becker and Bodley codexes and the resin from trees akin to *Liquidambar*.

Another possible form of incense offerings may have been torches with the form of serpents. The use of hachas[83] de incienso (torches of incense) for incensing was recorded in Central Mexico by Diego de Durán. The author referred to the use of large torches of incense with the form of a serpent in a ritual in which victims were to be sacrificed: 'before they would start to sacrifice them, a person in charge of burning incense would come out of the temple and they would bring in their hands a large torch of incense, in the form of a serpent, that they call *xiuhcoatl*, which would come lighted, and would make four turns around this stone, censing it and at last, they would throw it on the stone and there it would finish to be burned' (Durán [XVI century]1967: 293, translation mine)[84]. The ancient use of torches both as objects to illuminate and as offerings in a manner that may find a parallel with modern candles in the Maya lowlands has also recently been suggested (Morehart *et al*. 2005: 266, 268).

---

[83] Molina (1970 [1571]) uses the term *hacha* in Spanish to refer both to axes and torches. He defines *hacha para labrar la madera* (axe to carve wood) as *tlaximaltepuztli* in Nahuatl and *hacha para alumbrar* (torch for lightening) as *malinqui xicocuitla ocota* in Nahuatl. He also defines *hacha de tea para alumbrar* (torch of tea for lighting) as *ocopilli tlepilli*.

10.7.4. A comparison of archaeological incense from the Maya lowlands and Central Mexico

Based on the information above, there appear to be differences and similarities in the kinds of offerings recorded from both areas in the past and in the present. Although the collection of white copal by incision is a method shared in areas of Central Mexico and in the Maya area, the form of the product obtained from this method of extraction differs. Bars of white copal such as the ones found in the offerings from the Temple of Tenochtitlan and nearby buildings, also sold today in the markets and localities of Mexico City, Morelos, Puebla and Guerrero in Central Mexico, which were recorded by Clavijero as 'wide splinters' during colonial times, are not known archaeologically in the Maya area and were not recorded, to my knowledge, in this area in modern times. I have not seen bars of copal in the three markets I have visited, nor has Tripplett included them in her more thorough study of incense from markets in Guatemala. Because the form of the bars of white copal from Central Mexico is acquired by the form of the maguey leaves used to collect the resin (Lona 2004a: 166, Figs. 43a, b), the absence of these bars in the Maya area appears to be related to the different form of the leaves used to collect the resin in this area.

Balls of *copal blanco en hojuelas* (white copal in flakes), such as the ones recovered from offerings in Tenochtitlan (Lona 2004a, Fig. 47), have not been identified in archaeological specimens from the Maya lowlands. These balls and white copal in flakes in a loose form are also absent in my collection of modern samples of incense from the Maya area as well as in Triplett's collection of incense samples from modern markets in Guatemala. If the flakes of white copal are made when the leaves are full of resin and the resin drips from the leaves, as reported by one of Lona's informants, the absence of this type of incense flakes in the Maya area could also be explained by the different shape of leaves used to collect resin in the Maya area.

In reference to the spheres of white copal identified by Lona in the Templo Mayor and nearby buildings, the existence of balls of white copal in the Maya area in pre-Hispanic times is possible. In fact one of the specimens recovered from the Cenote of Sacrifice at Chichen Itza consists of a black pellet inside covered by a thick layer of yellowish resinous material which may have been white copal (Figure 112d). It would be interesting to know if some of the spheres of copal blanco identified by Lona also contain another material inside. I have not seen balls of *copal blanco* (white copal) in the markets I visited in the Maya area, nor have they been reported by Tripplett (1999) in her study of incense in Guatemala. Similarly, balls of *copal blanco* have not been reported by Naoli Lona or Rebecca Stacey in the modern markets that they visited in Mexico.

In reference to the *copal de goma* (gum copal) or *copal de piedra* (stone copal) identified both as a product from which pre-Hispanic offerings in the form of spheres were made as well as in modern markets in Central Mexico in a loose form, I have not identified the equivalent incense in my samples. The term *rachaq noj* in the *Popol Vuh*, however, is translated by Tedlock as 'leavings of pine resin'. According to Tedlock, *rachaq noj* would be 'pieces of bark on which a hard red resin has been formed as a result of the holes bored by worms. According to an informant, this is burned as an offering today in Momostenango (Andres Xiloj, personal communication to Tedlock 1985: 307), located in the Department of Totonicapán in the Guatemala highlands. The information suggests that a similar product to *copal de goma* or *copal de piedra* induced by the action of insects may also be used in the Guatemala highlands in modern times.

White copal wrapped in leaves such as the one commonly sold in markets in the Maya area today (Figure 101c) and possibly sold in pre-Hispanic times has not been found by Stacey or Lona in the markets they visited in Central Mexico (Lona and Stacey, personal communication 2007)[85]. It is not clear if white copal wrapped in leaves existed in pre-Hispanic times in Central Mexico. An offering depicted in the Aztec painted manuscript *Matrícula de Tributos* of the Mendoza Codex consists of a form of incense represented with dots wrapped in leaves identified in the document by a Spanish priest familiar with the Aztec language as '*ocho mil pellas de copales por refinar enbueltas las pellas en hojas de palma*' (eight thousand balls of unrefined copal wrapped in palm leaves). Lona suggests that the incense may be *copal de goma* or *copal de piedra*, and points out the modern existence of *copal de goma* wrapped in corn leaves in Huejutla, Hidalgo (Lona 2004a: Fig. 14g). Although this interpretation seems plausible, bars of white copal represented in the same document in association with a basket and identified as '*copal blanco refinado'* (refined white copal) are also represented with the same dots, making the identification of the copal wrapped in leaves as *copal de goma* problematic and allowing for the possibility that the image could represent *copal blanco* (white copal).

Balls of black copal made of bark with resin that may be similar to the ones found in Temple I in Tikal and which continue to be sold in markets in the Maya area today were not found in any of the markets visited by Lona in Central Mexico (Lona, personal communication 2007) nor in the markets from Tepoztlan or Oaxaca visited by Rebecca Stacey (Stacey, personal communication 2007).

---

[84] 'antes que empezasen a sacrificar, salía un incensador del templo y traía en la mano una gran hacha de incienso, a manera de culebra, que ellos llamaban xiuhcoatl, la que venía encendida y daba cuatro vueltas alrededor de esta piedra, incensándola, y al cabo, echabanla así ardiendo encima la piedra y allí acababa de quemar …' (Durán [XVI century] 1967: 293).

[85] In his study of the collection of copal by the father and children of a Q'eqchi' Maya family living in Mocozal, located in the department of El Peten in northeastern Guatemala (who was originally from the Alta Verapaz town of Lanquín), Kokelman reported that the placing of copal in *Corozo* palm leaves for transportation after its collection was made in order that the resin did not stick to anything or got dirty. The leaves in this case were not used as recipients to collect resin from the tree but to transport it (Kockelman 1999: 178).

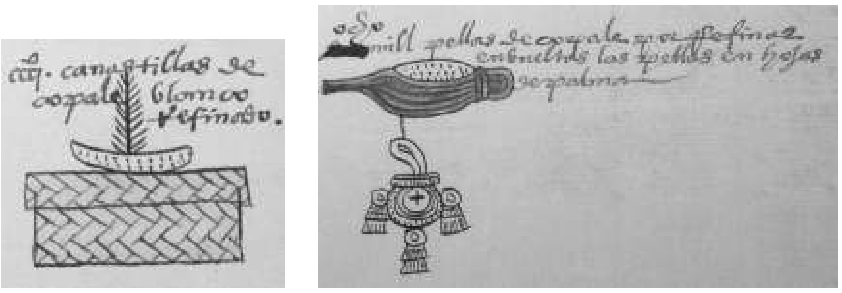

canutillas de copale blanco refinado
mill pellas de copale
envueltas las pellas en hojas de palma

Figure 124 Incense represented in the Matrícula de Tributos of the Mendoza Codex (after Berdan and Anawalt 1992)

Neither were the balls identified by Lona in her study of the offerings from the Templo Mayor of Tenochtitlan and nearby buildings.

In reference to the round and conical lumps of incense recovered from Structure 216-1 at Yaxhá (Figure 116) and from the Uchentzub Cave (Figure 115a) in the Maya area, Lona illustrates a specimen from the Laguna del Sol in the Nevado de Toluca which is similar in form but larger in size and which consists of a yellowish material with a whitish layer in its surface. It is not possible to know from the illustration what the specimen contains inside (Lona 2004a: Fig. 28b), but the illustration suggests that this form of incense was present during Postclassic times in both the Maya area and Central Mexico. Similarly, larger copal cones such as the one from Cave Uchentzub (Figure 115b) in the Maya area and the ones recovered from a crater lake in the Nevado de Toluca of Central Mexico (Figure 117) appear to have existed during the Postclassic period in both areas.

Anthropomorphic figures made with resin were common both in the Maya area (Coggins and Ladd 1992: 347, Fig. 9.7) (Figure 112a) and in Central Mexico (Lona 2004a: 151-133) in pre-Hispanic times.

10.8. CONCLUSIONS

Different kinds of incense from the Maya area and Central Mexico used in the present and in the past were discussed in this chapter. It was argued that both the act of burning incense and incense itself were meaningful and symbolic and that a better knowledge of the types of incense used can increase our understanding of the possible symbolism associated with incense in rituals as well as whether different types of incense were burned in different circumstances.

Central Mexican influences of various forms are thought to have taken place in the Maya area during the transition from the Late Classic/Terminal Classic to the Postclassic period. Because differences and similarities in the use of incense can suggest ways in which culture might have been shared or not in these areas, incense from the Maya area was compared to incense from Central Mexico with the aim of addressing this issue. It was anticipated that while some differences in the incense used may reflect local resources available in both areas, others may more adequately be explained by differences in cultural traditions. While most of the known pre-Hispanic unburnt incense specimens from the Maya area are dated to the Postclassic period, I argued that because aspects of incense and its use during the Postclassic and more recent times may be rooted in older practices and traditions, the use of incense during these periods may help in the formulation of hypothesis about incense used during the Classic period.

As discussed in Chapter 9, some information about incense during the Classic period may be inferred from burning patterns on incense burners. From this we know that during the Classic period, pure resin was burned in incense burners during rituals. Incense balls may have been used during the Classic period (Walker 1998:89-95). The glyphs *ch'aj* and *pom*, refer to types of incense used during Classic times. The former may consist of small granules of incense. The latter may be represented in the archaeological record in a Postclassic incense specimen from Yaxhá.

The amount of specimens of incense dated to the Postclassic period includes incense in the form of pure resin at least in some cases painted in blue in its outer surface with one or more black balls of another type of material found inside tripod bowls, spheres of pure resin with a composite of black organic matter inside, spheres painted in blue which from their outer surface look similar to modern balls of black copal, anthropomorphic figures, square-shaped incense with aligned pellets on one of its surfaces, conical lumps of incense with an outer layer of pure resin with a hole in the centre of the top, and smaller cones of incense with an outer layer of pure resin and at least in some cases inner balls of a black material (two of these, a smaller one at the top and another one at the bottom) with a hole on their top or a stick in the centre of the core. One of the latter has the representation of a pom glyph in its base.

Colonial documents make reference to copal (*pom*), *kik* (rubber) and *chahalte* as incense used in Colonial times. Copal is a general term used for incense that has diverse plant sources in modern times and this may have also been the case with *pom* in Colonial and perhaps earlier times. Rubber (*kik*) has been identified by the naked eye in some of the specimens found in the Cenote of Chichen Itza suggesting its use during the Postclassic period and its use was recorded during Colonial and Modern times.

Modern incense from markets in the Maya lowlands is sold as yellow granules of dried resin, crystalline yellowish

Table 21 Modern names of incense collected in markets of the Maya lowlands and Central Mexico

Maya Lowlands	**Central Mexico**
Market of Santa Elena, Peten • *incienso en grano* (granular incense) (Figure 100a) • *copal bolita negro* (small black ball of copal) (Figure 100b) • *bolas de copal* (balls of copal) (Figure 100c) • *cuilco* (Figure 100d) • *ensarte* (Figure 100e) • unidentified sample of incense (Figure 100f) • *mirra* (Figure 101a and 101b) • *copal blanco en hojas de guineo pom* (Figure 101c) • *ocote* (Figure 101e) • unidentified crystalline yellowish sample of incense (Figure 101d)	Market of Tepoztlan, Morelos (collected by Rebecca Stacey) • *copal blanco* (white copal) (Figure 105a) • *copal lágrima* (tear-shaped copal) (Figure 105b) • *copal mirra* (Figure 105c) • *copal incienso* (copal incense) (Figure 105d) • *copal negro* (black copal) (Figure 105e) • *copal piedra* (stone copal) (Figure 105f)
Market of Pino Suárez • *esencio del ambar* (incense of ambar) (Figure 104a) • *mirra* (Figure 104b) • *estoraque* (Figure 104c) • *copal blanco* (white copal) (Figure 104d)	Markets of Sonora, Ciudad de México; Yecapixtla, Morelos; Teloloapan, Guerrero; Liberaltepec, Guerrero; Axochiapan, Morelos; Jolalpan, Puebla; and Xochipala, Guerrero (Lona 2004a:83) • *copal goma* or *de goma* (Xochipala, Jolalpan, Axochiapan, Teloloapan, Yecapixtla, Sonora) • *copal negro* (identified as copal de goma) (Sonora) • *copal piedra* (identified as copal de goma) (Teloloapan) • *sahumerio* (identified as copal de goma) (Yecapixtla) • *bolitas negras* (Liberaltepec) • *copal santo* (identified as copal blanco) (Sonora, Yecapixtla, Teloloapan, Axochiapan, Jolalpan) • *copal de penca* (identified as copal blanco) (Yecapixtla) • *copal lágrima* (identified as pieces of copal blanco) (Yecapixtla) • *estoraque* (identified as shavings of wood) (Sonora, Teloloapan) • *mirra* (identified as bark from the copal tree) (Yecapixtla, Axochiapan, Jolalpan) • *incienso* • *incienso de castilla* (Sonora, Yecapixtla) • *en bola* (Xochipala) • *lagrimita* (identified as incienso) (Yecapixtla) • Piedritas grises (identified as copal de goma) (Liberaltepec)

pieces of dried resin, balls of copal negro, copal blanco wrapped in leafs, mirra, cuilco, ensarte, and estoraque. Ocote wood is also used to burn incense. How back can the use of these types of incense be traced in the Maya area? Balls of copal negro composed of the bark of a tree which contains some secreted sap and which are sold in modern markets may have been used during Postclassic times on the basis of the appearance of the surface material and size of the blue balls of copal recovered at Tikal in Structure 5D-1-1st (Figure 114). The inner composition of these balls, however, is unknown. Copal blanco, which is the pure resin of a tree, was used during Colonial times as evidenced by ethnohistoric documents, the Postclassic as evidenced by the yellowish resin found in the many Postclassic specimens of incense discussed in this chapter, and the Classic period, based on the burning patterns of vessels dated to this period. The possible use of copal negro and the use of copal blanco in the past suggest the continuation of two methods of extraction of copal. The extraction of copal negro would have been made by raising small pieces of the bark of a tree by knocking the bark with an instrument, and the copal blanco by making incisions on the tree which cause the exudation of sap which is then collected.

As it was noted, ‘estoraque’, ‘mirra’, and ‘ensarte’ are Spanish terms. The name ‘estoraque’ was given to a type of incense already present in Mesoamerica on the basis of comparisons to incense in the Old World as suggested by Fray Francisco Ximénez, who in Colonial times noted that its smell was no different from the estoraque of the Old World. Its form and composition in the Maya area as bark of trees and possibly branchlets sometimes with gum or resin as suggested in colonial documents and sold in markets in modern times makes it different from the estoraque of the Old World. In modern times the term ‘estoraque’ has been associated with the *Liquidambar styraciflua L.*– Hamamelidaceas in Oaxaca and Chiapas, and with *Styrax argenteus Presl.* – Estiracaceas in Villa Flores, Chiapas suggesting that estoraque incense may be obtained from these trees. Whether the type of incense referred to as estoraque was used during the Postclassic

Table 22 Incense from the Maya lowlands and Central Mexico as referenced in colonial documents

Maya Lowlands	**Central Mexico**
• Copal (*pom*) was defined as 'resin like turpentine, except that it is harder and very white' extracted from pom trees (Relación del Pueblo de Mama ([1580] RY, 1: 169 as cited in Landa 1941:75, n. 338). • *Kik* (rubber) was used in the form of balls as offerings in rituals (Landa 1941: 142). • *Chahalte* is referred to by Fray Diego de Landa as incense associated with the lords (Landa1941: 140, 144).	• *Copalli* was defined as '*incienso*' (incense) by Molina [1571] 1970). It is also referred to as a white liquid that is collected from some trees from hot lands on some large leaves where it curdles in the form of wide splinters (Benavente [1568] 1971: 67). Sahagún ([1590] 1978: 127) described it as 'incense, quite round, conical with quetzal feathers erected on their points'. The Codex of Mendoza refers to balls of unrefined copal and balls of unrefined copal wrapped in palm leaves, as well baskets with white copal, all to be used as incense, as part of the tribute goods paid to Moctezuma (Berdan and Anawalt 1992, Folios 36r and 35v). Torquemada (1976: 95) also mentions the use of *papel copal* (copal paper). • *Ulli* was used as burnt offerings on paper (Benavente [1568] 1971: 66), as well as in the form of balls (Durán [XVI century] 1967: 486). Mention is also made of '*formas de hombre de hule*' (forms of rubber men) or '*estatuas de hombre de hule*' (rubber statues of men), and '*panes de hule*' (loaves of rubber) (Rojas 1997). • *Yauhtli* was a herb identified as *Tajetes lucida* o *Tajetes florida* from the family of the Compuestas or Asteracea. It was used dried and then ground as incense, sometimes carried in a bag or haversack (Sahagún 1979: 166-167). It was also used as offerings to be burned together with paper, copal, and rubber (Sahagún 1979: 249). • '*Xochiocotzotl*' was defined by Fray Alonso de Molina (1970 [1571]) as '*liquidambar sahumerio*' (liquidambar incense), and the same author defined '*ocotzotl*' as '*resina de pino o trementina*' (pine resin or trementine). The Códice de Mendoza refers to '*ocho mil panes de xociocoçotl que es liquidambar*' (eight thousand loaves of liquidambar) and to '*ocho mill panes o pellas de liquidambar para sahumerios / que llaman xochiocoçotl / todo lo qual tributavan de seys en seys meses*' (also, eight thousand loaves, or lumps, of liquidambar for incense/which they call *xochiocoçotl*—all of which they gave in tribute every six months) (Berdan and Anawalt 1992, Folios 51r and 50v).

and earlier times is not known, but one of the specimens recovered from the cenote of Chichen Itza dated to the Postclassic period appears to contain a mix of bark and resin and possibly other parts of trees (Figure 112d).

'Mirra', a Spanish term also introduced in Mesoamerica, appears to be the bark of a tree graded in different sizes and is also different from the incense referred to under this name in the Old World. The balls of copal painted in blue from Tikal referred to in this book and some of the specimens recovered from the cenote of Chichen Itza may contain graded bark of trees.

I have not identified references to the use of the term 'ensarte' in Colonial records that would suggest its use during Colonial times. Neither have references occurred in representations of Postclassic or Classic Maya art. In reference to the yellow granular incense found in modern markets, there is some evidence suggesting that at least some of the yellowish granular incense used in Guatemala in modern times and other parts of Mesoamerica may be imported. A modern sample of yellowish granular incense was identified in this study as consisting of Boswelic acid derivatives and another sample from Tepoztlan in Central Mexico was identified as being Boswelia which is frankincense (not native to Mesoamerica). In addition, two other samples of similar granular incense, one collected in this study and another one collected by Tripplett were identified by its vendors as not being from Guatemala. The use of this kind of incense prior to modern times in the Maya lowlands is not known, although the reading of compound T93.682b with the attached suffix T87 as Ch'a-h(a) TE meaning tree drops of resin could refer to pure dried granular resin. The use of larger pieces of yellowish dried resin such as the ones found in modern markets has not been documented prior to modern times.

The preliminary information presented in this chapter suggests that by the Postclassic period, several forms of incense were similar in the Maya area and in Central Mexico. These are: balls of incense, anthropomorphic figures, conical lumps of copal with a hole in the centre of the top (Figures 115a and 116; Lona (2004a: Fig. 28b)), and larger cones of incense (Figures 115b and 117). This means a shared material culture of rituals in both areas and a possible shared symbolism in the materials. Because there are very few specimens identified for the Classic period in the Maya area, there is not enough information to suggest the sharing of concepts in both areas or possible influences of people from one area into another on the basis of the presence or absence of materials through time.

On the other hand, some types of incense appear not to have been used in both areas. Bars of copal such as the ones found archaeologically in Central Mexico, mentioned in Colonial records, and used in Modern times in the same area do not appear to have been used in the Maya area. Similarly, balls of a material similar to *copal negro* do not

Table 23 Archaeological incense from the Maya lowlands and Central Mexico dated to the Postclassic period

Maya Lowlands	**Central Mexico**
Incense recovered from the Cenote of Sacrifice in Chichen Itza (Figures 112 and 113) • Incense in tripod bowls (yellowish in colour, at least in some cases with one or more black balls inside) (Figures 113a, b, c, d, h) • Spheres (of a yellowish resinous surface with black balls inside or of a yellowish resinous surface with a composite of black organic matter inside) (Figures 112d, e, f) • Anthropomorphic figures (Figure 112a) • Square-shaped elements with aligned pellets on one of its surfaces (Figure 112b)	Incense recovered from the Templo Mayor and nearby buildings (Lona 2004a and b) • Spheres (*in hojuelas*, *en masa*, *copal de goma)* • Bars of *copal blanco* • Conglomerates described as consisting of *copal de goma* in an amorphous form • Anthropomorphic figures
Incense recovered from Tikal, Yaxhá, and the Uchentzub Cave • Blue painted balls possibly made of copal negro with a hole in the centre of the top (Tikal, Figure 114) • Conical lumps of incense with a hole in the centre of the top, 7 to 10.3 cm high each, with a surface of a very light brown color and traces of blue paint with a greenish tinge on the outside (one was broken and had an inner core of dark grey to black material with a stick in its centre (Uchentzub Cave, Cayo District, Belize) (Schmidt 1976/77) (Figure 115a) and similar specimens from Yaxhá (Figures 116a, b) • Cones of incense 17.8 cm high, with an outer layer of a light brown copal with several layers of a blue greenish tinge and an inner core of dark grey to black material, the centre of the core had a stick (Uchentzub Cave, Cayo District, Belize, Figure 115b) (Schmidt 1976/77)	Incense recovered from crater lakes in the Nevado de Toluca • Copal spheres (some with wooden splinters and maguey spines inside) (Luna 2000: 47-49; Guzman 1972:60) • Incense specimens similar in form to the conical lumps of incense from the Uchentzub Cave and Yaxhá (Lona 2004a: Fig. 28b) • Cones of incense (some with wooden splinters and maguey spines) (Figure 117) (Luna 2000: 47-49; Guzman 1972: 60) • Incense specimens associated with the form of small volcanoes (Lona 2004a: Fig. 28a)

seem to have been identified in Central Mexico either in the present or in the past, although future research may prove that they existed.

The type of contexts in which each kind of incense presented here was recovered suggests in several cases the use of similar types of incense in different kinds of rituals. Such is the case, for example, of the large cones of incense found in cave Uchentzub in the Maya area and in a lake in the Nevado de Toluca in Central Mexico. A larger sample of incense specimens may allow for the recognition of patterns marked by the contexts where each type of incense was recovered suggesting similarities and differences in ritual behaviour in both areas.

Future studies in the use of incense in rituals in both areas may continue to reveal similarities and differences in the material culture of rituals used in both areas during the Classic and Postclassic periods, and may shed light on changes and continuities in the material culture of ritual during the Classic to Postclassic transition.

11. DISCUSSION AND CONCLUSIONS

Rituals are repetitive actions or events that occur in specific places and at specific times. They are based on conventions and employ meaningful symbols which are socially established and which reflect social and religious values of a society (Turner 1968: 2). Because of this, changes in religion and other social aspects of society can be expected to be reflected in ritual. Although ritual acts are not material, it is possible to look at the material culture of ritual to understand changes and continuities in religion and other social aspects of society through time. Maya incense and incense burners, which are material culture of rituals, were imbued with symbolism and have been produced and used in specific ways. In this study, incense and incense burners were analyzed in order to understand aspects of Maya ritual practice and the continuation and/or innovation of ritual and religious ideas and their relation to broader social factors in Maya society during the end of the Classic period and the beginning of the Postclassic.

11.1. FORM AND FUNCTION

In agreement with Ferree's (1972) argument that a classification of the censers based on their shape is more suitable for their study, since shape is the aspect that varies the most, and that a type-variety approach based on surface finish, decoration, and paste attributes is less suitable for censers since these attributes are less variable, I have classified the material from my sample according to its formal attributes. My analysis included censers or censer parts as well as other specimens that have commonly been regarded in the literature as incense burners and which have burning evidence on their inner surfaces but whose function as containers in which incense was burned awaits clarification. Vessels that I encountered in museums not identified in the literature as incense burners but the inner surfaces of which were smudged or burned were also included in the analysis.

As described and discussed in Chapter 7, the material was classified as:

a) ladle censers

b) hollow cylindrical censer stands with flanges and a central modelled effigy representation (which include hollow cylindrical stands with flanges and the Jaguar/Sun representation, hollow cylindrical stands with flanges and a human portrait representation, hollow cylindrical stands with flanges and a central modelled full standing figure, and hollow cylindrical stands with flanges and a central modelled seated figure representation);

c) tubular cylindrical stands with flanges, a solid base, and a central modelled effigy representation

d) spiked hollow cylindrical stands

e) vases with an effigy face

f) pedestal-based censers (which include flanged zoomorphic pedestal-based censers as well as spiked pedestal-based censers)

g) three-pronged supports

h) containers with outflared walls

i) vessels with high walls and everted rims

j) spiked bucket-like vessels with flared walls

k) seated-effigy covers

11.2. CENSERS AND INCENSE BURNING

My study of incense burning patterns together with a consideration of information about the use of vessels from ethnohistoric and ethnographic records, representations of vessels in Maya art, and contexts of recovery suggests that the following censer forms were used as parts of, or complete, incense burners: ladle censers, hollow cylindrical stands of different types, seated-effigy covers, spiked pedestal-based censers, flanged zoomorphic pedestal-based censers, and some containers with outflared walls. The identification of other vessels in my study as incense burners is less secure. These include: vases with a face effigy, three-pronged supports, vessels with high walls and an everted rim, spiked hollow cylindrical stands, and spiked bucket-shaped vessels. Future studies may be conducted to address the function of these vessels. Unburned incense was used as an offering in the Maya area as well as in central Mexico and likely in other parts of

Mesoamerica and I have suggested that some vessels, such as the tripod bowls or plates recovered from the sinkhole of Chichen Itza, were used as containers for unburned incense offerings.

The burning pattern exhibited by a vessel can also sometimes yield information about the type of incense burned. On this basis, I have suggested that pure resin was burned in some vessels dated to the Classic period, and that incense together with lighted wood was burned in ladle censers. In future, more attention should be given by archaeologists to the study of different kinds of incense—as well as incense mixed with other substances and materials—and the burning patterns they produce. This can lead to a better understanding of how vessels in which substances were burned were used in the past. Knowledge of the incense used (including its formal attributes and composition) can also serve to increase our understanding of whether different types of incense were used in specific kinds of ritual activities, were associated with specific groups of people (e.g. with elites or nobility), or were contained and burned in specific kinds of vessels. These questions can be investigated diachronically to address changes and continuities in the use of incense through time and the possible links with broader aspects of society. One avenue to follow in the future might be, for instance, to compare the range of incense used in the Early Postclassic (and the censers that were used to burn the incense) with Classic times. Is it possible to identify, for instance, incense in Classic times associated strictly with the censers with the Jaguar-Sun? If so, does this type of incense become more broadly used in the Post-classic?

I have also argued that both the act of burning incense and incense itself were meaningful and symbolic. Therefore a better understanding of the kinds of incense used can shed light on the symbolism associated with incense in rituals in the past. In addition to discussing different kinds of incense used in the Maya area during modern, historic, and pre-Hispanic times, I included a comparison of incense used in the Maya area with incense used in areas of Central Mexico through time. My purpose was to address similarities and differences in another form of material culture (the incense itself) and to explore ways in which culture might have been shared in these areas, and to contribute to the debate about Central Mexican influences in the Maya area.

Because most of the documentary data available on incense from pre-Hispanic times in the Maya area dates to the Postclassic period, I was unable to suggest changes and continuities in the use of incense from the Classic to the Postclassic period in the Maya area or to compare incense from these areas during Classic times. Nor could I comment in any detail on possible influences of people or ideas from one area into another on the basis of the presence or absence of materials through time. Nevertheless, the preliminary information I presented suggests that by the Postclassic period, several forms of incense were commonly used in the Maya area and in Central Mexico. These are: balls of incense, anthropomorphic figures, conical lumps of copal with a hole in the centre of the top, and larger cones of incense. This commonality implies that aspects of the material culture of ritual were shared by both areas as was symbolism of the materials.

On the other hand, some types of incense appear not to have been used in both areas. Bars of copal such as the ones found archaeologically in Central Mexico, mentioned in colonial records, and used in modern times in the same area do not appear to have been used in the Maya area. I have suggested that the presence of this type of incense in Central Mexico and its absence in the Maya area may be due to differences in the local resources available in each area. Another type of incense, balls of a material that appears to be similar to copal negro common in the Maya area, does not seem to have been identified in Central Mexico either in the present or in the past, although future research may prove that it existed.

11.3. CONTEXT AND DISTRIBUTION

The contextual and distributional analysis of censers conducted in this study yield interesting information about the use of censers in Maya ritual practice. Some of the information is summarized below and is organized in a way that helps address aspects of the use of censers in the Maya lowlands which can be used to better understand the transition from the Classic to Postclassic period.

11.3.1. Censers associated with temples and shrines

The data presented in this study show that several types of censers or censer parts have been recovered in primary contexts from pyramidal, high, terraced platforms and the buildings supported by them (temples). These are: ladle censers, spiked pedestal-based censers, hollow cylindrical stands, containers with outflared walls (with attributes such as spikes and round, rectangular, and cross-like perforations), and seated-effigy covers. The censers were found in the following contexts within these structures: a) on the floors of the buildings, b) intruded into the floor of a building, c) as a sealed deposit of censers beneath a 'bench' that may have served as a throne or altar at the centre rear of the third room of a building, d) as a cache in a platform, e) in a burial, f) in the core of the structure supporting a building, g) and in the core of a platform located between the steps of the structure and a stela. Other primary contexts where censers were recovered, not identified in my sample of studied materials but identified by Martha Cuevas at Palenque, are in the core of the terraced platforms of structures supporting a temple building, and in one case, on the surface of one of the terraces of a platform which supported a temple building. A different type of context was identified in a structure interpreted by its excavators as a shrine. The structure was located to the east of a group and consisted of a masonry vaulted building with two longitudinal rooms and a frontal stair. A hollow cylindrical stand was found on a frontal niche that divides the stairs of the structure in two.

Of the censers found in temples and shrines, hollow cylindrical stands with flanges and the representation of the Jaguar/Sun are believed to have been part of the paraphernalia of divine kingship (P.M. Rice 1999) on the basis of their provenience and iconography, and therefore, the continuity or discontinuity in the use of these vessels through time could be argued to reflect political aspects of Maya society. The stands from the sample analyzed as part of my research were recovered in primary contexts from pyramidal, high, terraced structures that supported a building (temples), structures identified as shrines, an eastern structure within a plaza group (which may have been a shrine), a structure with a carved panel (#19) depicting a ritual (probably of a ceremonial nature), and a structure of unknown function joint to the east structure of a group. These censers, which have also been recovered from a cave context, were not identified in my study in other types of structures. Seated-effigy covers, which are associated with pyramidal, high, terraced structures supporting a building (temples) and have not been identified in my study in any other context were also part of rituals that would have been part of the Classic Maya state religion and would have also been associated with the ruling elite on the basis of their provenience and iconography.

I have suggested that hollow cylindrical stands and seated-effigy covers which were located along the central axis of high, pyramidal structures supporting a building aligned with the main burial of the structure together with other censers were used in rituals associated with the deceased royal interred within the structures. The censers were also sometimes part of rituals in which the Maya razed buildings and their platforms and built over them as part of a new phase of construction and their presence on the floors of the buildings may in some cases suggest their previous use in other kinds of rituals within the buildings. The hollow cylindrical stand with the representation of the Jaguar/Sun recovered from a niche that divides the stairs of a structure identified as a shrine in Group 6C-XV, south of Mundo Perdido suggests the display and use of the stands in niches.

The chronology of hollow cylindrical stands with flanges and the Jaguar/Sun representation from Temple SE-486 at Uolantun extends to the Terminal Classic period based on a more recent review of the materials that were found on the floor of the temple. The same applies for the seated-effigy covers from the same temple. The use of both censer parts would have ceased by the time when the Classic-period occupation came to an end at the site.

11.3.2. Censers associated with residences

Ladle censers have been found in burials in two structures identified by their excavators as dwellings at Mayapan in contexts that would date, on the basis of revised chronologies, to the Terminal Classic/Postclassic period and to the Late Postclassic period. This, and a ladle censer found together with a flanged zoomorphic pedestal-based censer in a small mound (mound 24) in a settlement area at Altar de Sacrificios, as well as the ladle censer from Machaquila (Group 10), suggests that people may have had ladle censers and flanged zoomorphic pedestal-based censers in their houses and used them in rituals conducted in the houses, and perhaps elsewhere in the case of the ladle censers during the Terminal Classic period. The identification of the small mound at Altar de Sacrificios, however, is tentative. Although spiked pedestal-based censers appear in burials in residential areas, the function of some of the structures where they have been found is unclear, and so is their use in residences.

11.3.3. Censer types found in diverse contexts and widely used

It can be noted from the data presented in this book that two types of censers appear in a variety of contexts and were widely used: ladle censers and spiked pedestal-based censers. Both types of censers have been recovered in elite and non-elite structures, residential and non-residential groups, and in epicentral areas of sites as well as in areas at varying distances from the main public/administrative and ritual centres of sites.

Ladle censers have been found in ceremonial as well as residential structures. They have been recovered from an elite burial dated to the early Late Classic period (in the core of the substructure of a temple), as well as from burials dated to the Terminal Classic and Postclassic periods. The data suggest that by the Terminal Classic and during the Postclassic period, ladle censers were used in burials in different kinds of structures, elite and non-elite, suggesting a common use of the censers in funerary rituals during these periods. The use of ladle censers in structures that belonged to non-elite people during the Late Classic period is a matter that should be explored in future studies.

Ladle censers have also been found as caches in a ceremonial structure at Ucanal (a pyramidal, high, terraced structure without an identified building on top, in a context dated to the Postclassic) and in the small mound in a residential area at Altar de Sacrificios mentioned above which is possibly a residential structure in a context dated as likely Terminal Classic. Two other contexts where ladle censers were recovered are: in a four-lobed enclosure in the centre of the Main Plaza of Machaquila and on the floor of the rooms of Structure 5D-26-1st, a temple building located in the North Acropolis of Tikal. Ladle censers have also been found in caves and other structures of a less clear function. The variety of contexts in which this type of censer has been recovered suggests their use in a variety of rituals.

Spiked pedestal-based censers also appear in a variety of contexts. Some evidence presented in this book suggests that these censers were used during the Late Classic period. Their presence is clearer during the Terminal Classic, and the vessels continued to be used during the Early and Late Postclassic periods as well as in Colonial times. Spiked pedestal-based censers were used in residential and non-residential groups as well as in epicentral and outlying areas of archaeological sites. The censers have been found in cave contexts, in temples, in association with stelae, in burials (in ceremonial as well as in residential groups), and in structures of unknown function.

11.3.4. Censers in epicentral vs. peripheral areas of sites

Ladle censers, hollow cylindrical stands, spiked pedestal-based censers, and zoomorphic pedestal-based censers have been recovered from both epicentral and peripheral areas of sites. The seated-effigy covers presented in this study were recovered from epicentral areas of sites only if Structure SE-486 in Uolantun can be considered epicentral, otherwise, in both epicentral and peripheral areas.

11.3.5. Private vs. public use of the censers

The types of structures where censers are found can be used in an attempt to identify community rituals (conducted to affect the community as a whole) as opposed to more private rituals such as the ones carried out in people's residences. Censers found in important ceremonial structures such as temples or eastern platforms in E-groups, would have been part of community rituals. Based on the presence of censers in temples, it can be argued that the following censers were used in community rituals: ladle censers, spiked pedestal-based censers, hollow cylindrical stands, seated-effigy covers, and zoomorphic pedestal-based censers. Censers that were used in residences and that would have been therefore used in rituals privately performed are: ladle censers and zoomorphic pedestal-based censers.

Although rituals in the domestic domain would have been privately performed, it is sometimes difficult to assess whether community rituals were publicly or privately performed. The rituals performed in the four-lobed enclusure in the centre of Plaza A of Machaquila, are likely to have been open to view to a considerable number of people relative to the size of the site. The placement and display of censers on the floors of the terraced platforms of structures supporting a building (temples) or on niches may also suggest that at least some rituals conducted in these structures involved a large number of people. So not only the type of structures and their location but the contexts of recovery of censers within the structures, may help address whether the rituals conducted were likely to be public or private. Nevertheless, the context of recovery of censers within structures may not necessarily be indicative of one or the other, for instance, rituals conducted in the cores of structures supporting temple buildings and in the rooms of temple buildings (which were closed spaces) may still have been publicly performed and attended by people from the plazas.

11.4. WHAT THIS STUDY OF CENSERS SUGGESTS ABOUT THE MAYA 'COLLAPSE'

Data suggest that ladle censers and spiked pedestal-based censers were used in other areas of Mesoamerica prior to the Late Classic period, when the censers first appear to have been used in the Maya area. This supports an association of these two kinds of censers with movements of people and/or ideas into the Maya area by Late Classic times. While the identity of the people who may have had an influence in the use of these censers remains a difficult task to address in future studies, some data presented in this book shed light on aspects that relate to how these new forms of censers where first used in the Maya area, and the relation of this to broader aspects of Maya society by the end of the Classic period.

As discussed in Chapter Eight, the presence of ladle censers and spiked pedestal-based censers in the Maya lowlands suggests changes in ritual practice. How much the changes in ritual practice associated with the use of these censers reflect changes in religious ideas is not clear. The censers may represent significant change, or when used, their symbolism or meaning may not have been in conflict with the local ideology, especially if we consider how many aspects of religion different Mesoamerican groups had in common. In fact, while ladle censers appear to be a new form in the Maya lowlands, appliquéd spikes and pedestal supports were not new to the Maya before spiked pedestal-based censers started to be used.

Most interesting from the data presented in this study is the temporal overlap of ladle censers and spiked pedestal-based censers with flanged hollow cylindrical stands with the representation of the Jaguar/Sun, the latter of which would have been associated with the local Classic Maya state or royal religion. This temporal overlap challenges the idea posed in previous studies of a replacement of the cylinders by ladle censers and pedestal-based censers by the end of the Classic period (P.M. Rice 1999: 40; Sabloff 1973: 108, 119). The cylinders were in use during the Late Classic and Terminal Classic periods and some data presented in my analysis suggest an early use of ladle censers and spiked pedestal-based censers during the Late Classic period, and during the Terminal Classic, both types of censers were commonly used. One example of the early use of ladle censers is the censer found in Structure 5D-5 at Tikal, in an elite burial context dated to the early Late Classic period (Section 6.1., K). If the Late Classic dating of this context is correct, as well as the Late Classic dating of other ladle censer material from Piedras Negras and the Proyecto Atlas Arqueológico de Guatemala (found in less secure contexts), then ladle censers were used at some sites in the Maya lowlands earlier than previously thought.

Spiked pedestal-based censers are also likely to have been used during the Late Classic period on the basis of the censer found in situ beneath a bench of Room 3 of Structure 5D-32-1st at Tikal in a context dated to the early Late Classic (Section 6.1., I), as well as another censer found in a burial at Caracol also dated to the Late Classic period, and other ladle censer material dated to the Late Classic/Terminal Classic period from other sites (Section 7.5.1.2.4.1.). A primary context dated to the Terminal Classic in the rear temple room of Structure 30-1st at Las Ruinas de Arenal, confirms a temporal overlap of spiked pedestal-based censers and the cylinders. In this context, a flanged cylinder with the Jaguar/Sun representation was found in association with a spiked pedestal-based censer among other ceramic material. A contextual association of ladle censers with the cylinders is less clear but a possible case occurs in Structure 5D-34 in Tikal, a temple building supported by a high, pyramidal platform in lots which consisted of fill over the floor level of the room of the building.

A significant inference that can be drawn from the example of the ladle censer in a burial context in Structure 5D-5 and the example of the spiked censer found in Structure 30-1st at Las Ruinas de Arenal is that both types of censers were used by members of the ruling elite before the end of the Classic period. These examples may indicate the use of the censers by elite members who may have had a different cultural affiliation; alternatively, the rituals in which the censers were used may have involved local Maya elites, some of whom had adopted new cultural or religious practices. Future studies should examine whether the use of ladle censers and spiked pedestal-based censers by Classic period elites was common or rare; such studies should also consider what the use of one or the other censer implies. Were the censers initially used by non-elites as well? A topic to explore in future studies is whether the appearance of ladle censers and spiked pedestal-based censers in the Maya lowlands is sporadic or systematic. The small number of ladle censers and spiked pedestal-based censers from primary contexts dated to the Late Classic period as compared to those dated to the Terminal Classic and Postclassic periods in the data analyzed in this study may be indicative of a sporadic rather than systematic appearance of these new forms into the Maya lowlands during Late Classic times. The nature of this change is important because it could be telling us something about whether cultural change was brought about by inter-marriage or relationships reflecting long-term trade ties (incremental and sporadic), or warfare with groups with different cultural practices who prevailed (systematic).

The data analyzed in this study also suggests that while ladle censers and spiked pedestal-based censers continued to be used after the end of the Classic period, flanged cylindrical stands with the Jaguar/Sun representation ceased to be used by the end of the Classic period. How can this be explained? As I previously discussed, by the end of the Classic period, ladle censers and spiked pedestal-based censers were used in a variety of contexts by elite and non-elite people in ceremonial and residential areas of sites, which suggests that these censers were broadly used in different kinds of ritual activities. On the other hand, the flanged cylindrical stands with the Jaguar/Sun representation presented in this study were found in temples and eastern structures only, as well as in caves, during the Late Classic and Terminal Classic periods, which supports the idea posed by Rice (1999) that these censers were part of the state religion associated with the ruling elite. If ladle censers, spiked pedestal-based censers and the cylinders were used by Maya elites, as I have suggested in this study, then the continuation of the use of ladle censers and spiked pedestal-based censers after the Classic period can be explained if these two types of censers were not particularly associated with dynastic rituals or rituals associated with the sanctity of the king as patrons of the royal lineage. The cessation of the use of cylinders may be explained by changes in the political system by the end of the Terminal Classic period and a direct association of these vessels with state and/or dynastic rituals, as Rice (1999) has suggested. I have argued in this study that the same would have occurred with the seated-effigy covers which were associated with the ruling elite (on the basis of their contexts of recovery and iconography) and which ceased to be used by the end of the Classic period. The cessation of the use of these censers likely reflects the discontinuation of the ritual activities in which they were used, due to either the 'collapse of divine kingship' as Rice (1999) has suggested or at least owing to a weakening of the power of the ruling elite by the end of the Classic period.

An important outcome of my research is the implication that changes in the '*incensario* complex' were more gradual than previously thought. The analysis of the data presented in this book suggests that new forms of the material culture of ritual were adopted in some areas of the Maya lowlands during the Late Classic period and used at the same time and sometimes together with forms that were traditionally used by the Classic Maya. My research also supports the idea that many of the changes that define the Classic to Postclassic transition involve the termination of particular elaborate culture associated with elites (Demarest *et al*. 2004: 569-572; P.M. Rice *et al*. 2004: 9) by the end of the Terminal Classic period.

12. APPENDIX

12.1. SECTION A

12.1.1. Terminology

Atole: A cooked corn gruel.

Bench: A relatively small platform-like feature associated with a Building, usually within a room but occasionally abutting an exterior wall face. Though they are sometimes primary Building features, benches are very often secondary additions. The term 'bench' is simply a unit designator, and does not carry with it any implication of specific use; the variety in form, location, and core contents of benches suggests, in fact, that the feature saw a wide range of uses (Loten and Pendergast 1984).

Building: As a general term, any piece of construction; as a specific term, with an initial capital letter, the component of a structure that incorporates the principal rooms, though rooms may also be present in components other than the Building. To qualify as a Building, the component must have at least one doorway; the location of the doorway is generally the most significant factor in identification of the Building front. The term SUPERSTRUCTURE has been treated as a synonymous with Building, but it can, and in fact often does, embrace a broader range of components (Loten and Pendergast 1984).

Building platform: A substructure component that directly sustains, or appears to sustain, a Building. The Building platform duplicates or very closely approximates the Building in its perimeter plan (Loten and Pendergast 1984).

Burial: The deliberate disposal of the dead (Bahn 1993).

Cache (*escondite*): An artifact or group of artifacts intentionally placed in a specific location unrelated to a burial, often but not always on the primary or a transverse axis. The artifacts that comprise a cache were presumably intended as an offering, but the term 'cache' is preferable because it is a designator without functional implication. Caches may lie in the core of a structure or in a pit cut into antecedent construction; they were usually sealed immediately after placement (Loten and Pendergast 1984).

Chalice: a vessel with the form of a drinking cup.

Copal: Term used to refer to the incense called 'pom' as well as to the trees from which pom incense is obtained called 'pom' trees.

Core: Internal or hearting masonry of a unit such as a platform, wall, bench, vault, stair, or outlet. Core was amassed, generally in task units when large quantities of material were involved, and was not dumped into a form created by the unit exterior. Whereas the core masonry of smaller units generally requires a facing for stability, that of platforms is normally stable in itself (Loten and Pendergast 1984).

Estoraque: A type of incense used in the Maya area, Central Mexico, and possibly other areas of Mesoamerica. Modern samples of estoraque from the Maya area collected for this study and recorded by Triplett (1999) appear to be composed of the bark of trees and possibly branchlets or twigs with resin. The botanical source (or sources) of estoraque in Mesoamerica is not clear but in the Maya area of Chiapas estoraque has been associated with *Styrax argenteus* Presl.-Estiracaceas and/or *Liquidambar styraciflua* L.-Hamamelidaceas. References to the use of estoraque in the Maya area and Central Mexico can be found since colonial times.

Fill: Loose material, generally placed by dumping, with little or no capacity to maintain its own stability above its natural angle of repose. If fill is to be built up to any appreciable height, it must be retained at the edges, and this appears to be a strategy that was foreign to Maya limestone construction. As a result, the term 'fill' is generally applicable only to those instances in which an excavated pit or other feature served as a receptacle for dumped material (Loten and Pendergast 1984).

H'osbal po.m: Instrument that resembles a chisel with a steel blade and a wooden handle used to prick the bark of a tree.

Mirra: A type of incense used in the Maya area as well as in other parts of Mesoamerica that appears to be the bark of a tree graded in different sizes and described as bark chips or bark fragments. The botanical source (or sources) of the mirra is yet to be determined.

Niche: A recess in a wall or other unit. A niche is distinguished from other types of recesses by a depth that is relatively great in comparison with width. The resulting still is more or less rectangular; it may be above or near floor level (Loten and Pendergast 1984).

Ocote: A highly resinous wood from pine trees used for burning incense and sold in markets in the form of splints in bundles.

Platform: Either a complete structure or a component that is formed so as to provide an essentially horizontal upper surface that supports another component or serves as an activity area in itself (Loten and Pendergast 1984).

Pom: A term used for incense in the Maya area. In this study, the only modern sample of incense collected that was identified by the person who sold it as 'pom' consists of pure resin of a tree or trees. In some areas of Guatemala, however, 'pom' is also used to refer to incense elaborated with other parts of the trees. Pom is also a term used to refer to the trees from which pom incense is obtained. The incense known as 'pom' has diverse plant sources and has been associated in the literature with several species of the family Burceraceae and the family Pinaceae.

Pyramid: High, terraced platform with a wide base and relatively narrow platform surface.

Offering: Something presented to God (or to a deity, etc.) in worship or devotion; eg. a slain animal, fruits, money, or other things, given as an expression of religious homage or as a feature of religious worship; a sacrifice; an oblation.

Shrine: An enclosure regarded as holy because of its associations with a supernatural being or a sacred person.

Spiked censer: Incense burner decorated in its surface with small conical spikes or protuberances. The spikes may be arranged in groups forming patterns, or may be heavily applied on the surface of the censer.

Spiked sherd: Ceramic fragment decorated in its surface with small conical spikes or protuberances.

Spiked vessel: Container decorated in its surface with small conical spikes or protuberances.

Structure: As a general term, without an initial capital letter, any piece of construction (synonymous with Building); as a specific term, with an initial capital, a single complete architectural entity with all its modifications. In a construction sequence, separate Structure designations are used whenever it can be shown that an architectural entity was entirely submerged within the mass of subsequent construction (Loten and Pendergast 1984).

Substructure: The complete set of components that support a Building. The same set of components may exist as an entity without a building at the summit, but in that case the term 'substructure' can hardly be applied since there is no superstructure (Loten and Pendergast 1984).

Superstructure: The complete set of components that make up and/or are associated with a Building, and are supported by a substructure. The superstructure usually consists of a building alone, a Building plus roof cob, or a Building plus a second storey; it can, however, include free-standing walls, altars, roof-comb-like units without usable upper surfaces, and a variety of other permanent or impermanent features, among which are thatched Buildings and other units (Loten and Pendergast 1984).

Temple: A building with a religious function (Bahn 1993).

Xpuhuc (or *pericón*): A type of incense used in the Maya area (as well as in other areas of Mesoamerica under different names) that is a herb usually identified as *Tajetes lucida* or *Tajetes florida* from the family of the Compuestas or Asteracea.

12.2. SECTION B

12.2.1. List of tables used in the database

Main tables:

- Main Table Censers
- Chronology
- Context
- Site

Tables for censer forms:

- Ladle
- Containers on Pedestal Support **(CPS)**
- Flared Containers **(FC)**
- Loop Handle Containers **(LHC)**
- Incurved and Straight Wall Containers **(ISC)**
- Plate with Loops **(PL)** (plates with loops attached to their inner walls and base)
- Container on Pedestal Support HSE **(CPS HSE)** (containers with pedestal support with a human standing effigy represented on them)
- Dish on Pedestal Support with Loops **(DPS L)** (dishes on pedestal support with loops attached to their inner base and walls)
- Pronged Base on Pedestal Support **(Pronged Base PS)** (censers with a pronged base on a pedestal support)
- Cyl Anth Effigy Support FN **(CAE)** (cylindrical supports with an anthropomorphic effigy represented as the only or main mask, with flanges and no base)
- Cyl Non-Anth Effigy Support FN **(CNA)** (cylindrical supports with a non-anthropomorphic effigy represented as the only or main mask, with flanges and no base)
- Cyl Non-Effigy Support N **(CNE)** (cylindrical non-effigy support without flanges or base)
- Vase with Human Effigy **(VHE)**
- Covers/Cover Fragments

Tables for unclassified and/or fragmented censer material:

- Unclassified Cylinders/Cylinder Fragments **(U CYL)**
- Unclassified Flange/Flange Fragments **(U FLA)**
- Unclassified Headdress Elements
- Unclassified Masks/Mask Fragments **(UM)**
- Unclassified Earplugs
- Prongs
- Unclassified Figurines
- Unclassified Decorated Sherd
- Unclassified Undecorated Sherd

Tables associated with specific parts of effigy censers:

- Human Mask
- Non-Human Mask
- Effigy fragments

‘Decoration’ tables

- Decoration **Laddle**
- Decoration **CPS** (Container on Pedestal Support)
- Decoration **FC** (Flared Containers)
- Decoration **LHC** (Loop Handle Containers)
- Decoration **ISC** (Incurved and Straight Wall Containers)
- Decoration **PL** (Plate with Loops)
- Decoration **CPS HSE** (Container on Pedestal Support HSE)
- Decoration **CNE** (Cylindrical non-effigy support without flanges or base)
- Decoration **DPS L** (Dish on Pedestal Support with Loops)
- Decoration **Prong Base PS** (Pronged Base on Pedestal Support)
- Decoration **CAE** (Cyl Anth Effigy Support FN)
- Decoration **CNA** (Cyl Non-Anth Effigy Support FN)
- Decoration **CNE** (Cyl Non-Effigy Support N)
- Decoration **VHE** (Vase with Human Effigy)
- Decoration Covers/Cover Fragments
- Decoration **U CYL** (Unclassified Cylinders/ Cylinder Fragments)
- Decoration **U FLA** (Unclassified Flange/Flange Fragments)

‘Burning Evidence’ tables:

- Burning Evidence **Ladle**
- Burning Evidence **CPS** (Container on Pedestal Support)
- Burning Evidence **FC** (Flared Containers)
- Burning evidence **LHC** (Loop Handle Containers)
- Burning Evidence **ISC** (Incurved and Straight Wall Containers)
- Burning Evidence **PL** (Plate with Loops)
- Burning Evidence **CPS HSE** (Container on Pedestal Support HSE)
- Burning Evidence **DPS L** (Dish on Pedestal Support with Loops)
- Burning Evidence **Pronged Base PS** (Pronged Base on Pedestal Support)
- Burning Evidence **CAE (**Cyl Anth Effigy Support FN)
- Burning Evidence **CNA** (Cyl Non-Anth Effigy Support FN)
- Burning Evidence **CNE** (Cyl Non Effigy Support N)
- Burning Evidence **VHE** (Vases with Human Effigy)
- Burning Evidence Covers/Cover Fragments
- Burning Evidence Effigy Fragments
- Burning Evidence Human Masks
- Burning Evidence Non-Human Masks
- Burning Evidence **U CYL** (Unclassified Cylinders)
- Burning Evidence **U FLA** (Unclassified Flange/Flange Fragments)

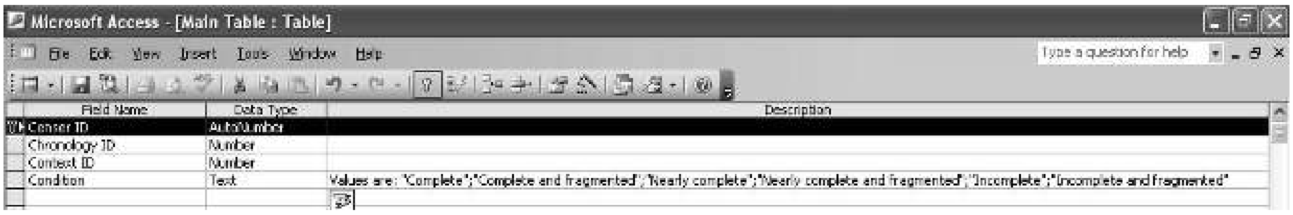
‘Manufacture’ tables:

- Manufacture **Laddle**
- Manufacture **CPS** (Container on Pedestal Support)
- Manufacture **FC** (Flared Containers)
- Manufacture **LHC** (Loop Handle Containers)
- Manufacture **ISC** (Incurved and Straight Wall Containers)
- Manufacture **PL** (Plate with Loops)
- Manufacture **CPS HSE** (Container on Pedestal Support HSE)
- Manufacture **DPS L** (Dish on Pedestal Support with Loops)
- Manufacture **Prong Base PS** (Pronged Base on Pedestal Support)
- Manufacture **CAE** (Cyl Anth Effigy Support FN)
- Manufacture **CNA** (Cyl Non-Anth Effigy Support FN)
- Manufacture **CNE** (Cyl Non-Effigy Support N)
- Manufacture **VHE** (Vases with Human Effigy)
- Manufacture Covers/Cover Fragments
- Manufacture Effigy Fragments
- Manufacture Non-Human Masks
- Manufacture Human Masks
- Manufacture **U CYL** (Unclassified Cylinders)
- Manufacture **U FLA** (Unclassified Flange/Flange Fragments)

12.3. SECTION C

12.3.1. Examples of tables included in the Censers Database

Table 24 Main table of the Censers Database

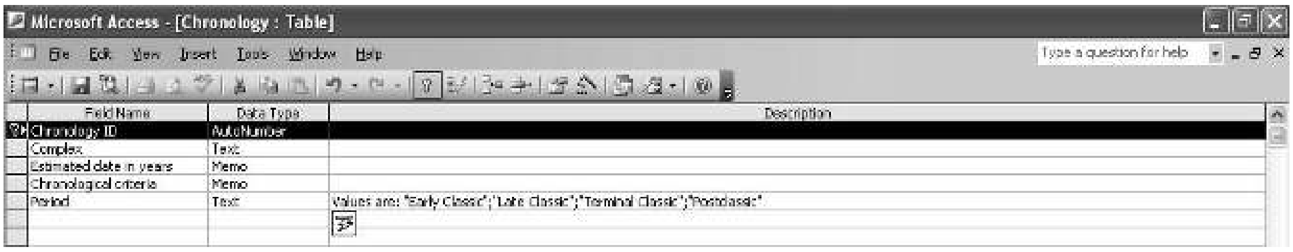


Field Name	Data Type	Description
Censer ID	AutoNumber	
Chronology ID	Number	
Context ID	Number	
Condition	Text	Values are: "Complete";"Complete and fragmented";"Nearly complete";"Nearly complete and fragmented";"Incomplete";"Incomplete and fragmented"

Observations:

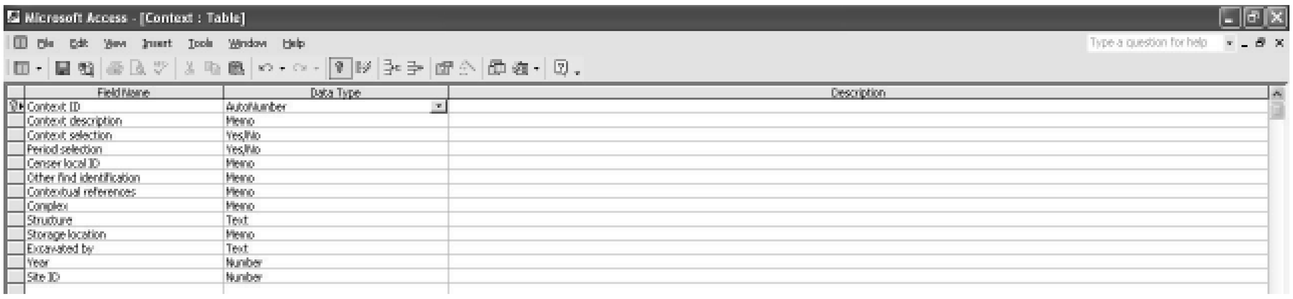
The value ‘Nearly Complete’ is used in cases when 70% or more of a censer is present. The value ‘Incomplete’ is used when less than 70% of a censer is present.

Table 25 Table used to record the chronologies given to the censer material


Microsoft Access - [Chronology : Table]
File Edit View Insert Tools Window Help
Type a question for help

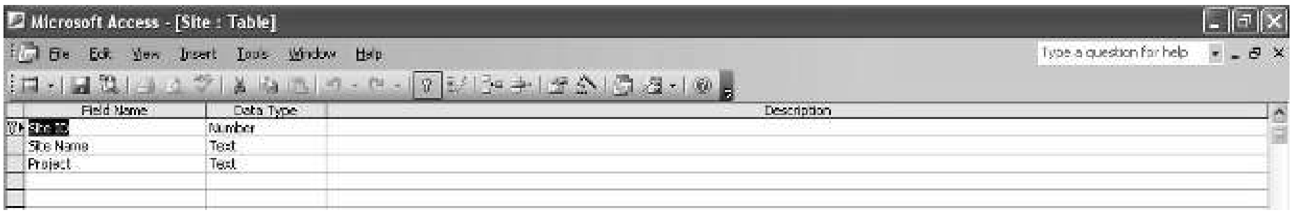
Field Name	Data Type	Description
Chronology ID	AutoNumber	
Complex	Text	
Estimated date in years	Memo	
Chronological criteria	Memo	
Period	Text	Values are: "Early Classic";"Late Classic";"Terminal Classic";"Postclassic"

Table 26 Table used to record contextual information of the censer material


Microsoft Access - [Context : Table]
File Edit View Insert Tools Window Help
Type a question for help

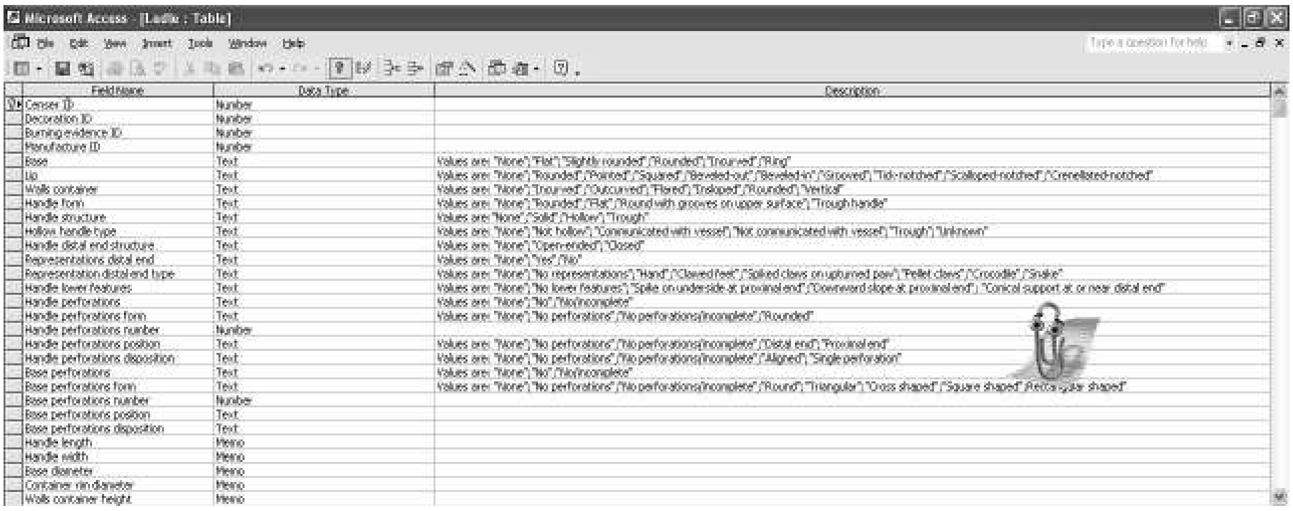
Field Name	Data Type	Description
Context ID	AutoNumber	
Context description	Memo	
Context selection	Yes/No	
Period selection	Yes/No	
Censer local ID	Memo	
Other find identification	Memo	
Contextual references	Memo	
Complex	Memo	
Structure	Text	
Storage location	Memo	
Excavated by	Text	
Year	Number	
Site ID	Number	

Table 27 Table used to record information about the sites where the censer material was recorded


Microsoft Access - [Site : Table]
File Edit View Insert Tools Window Help
Type a question for help

Field Name	Data Type	Description
Site ID	Number	
Site Name	Text	
Project	Text	

Table 28 Table for the general category of ladle censers with the fields and values given to its fields

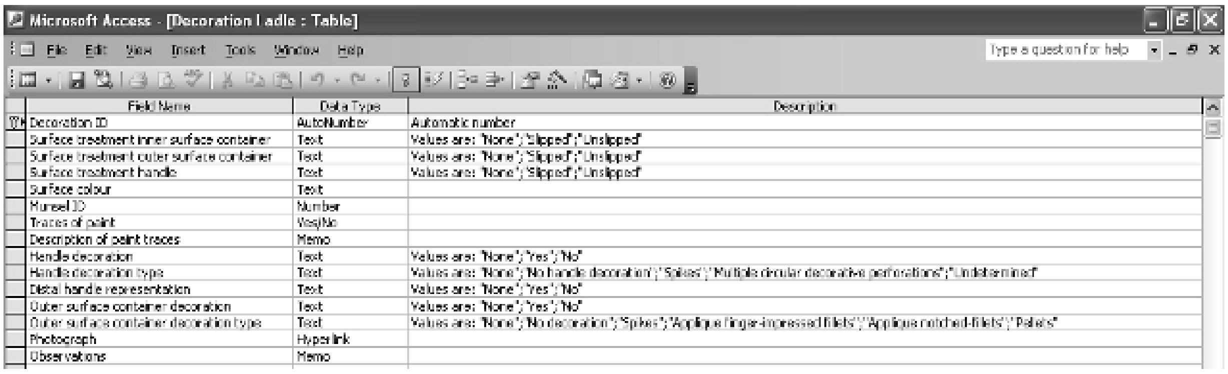

Microsoft Access - [Ladle : Table]
File Edit View Insert Tools Window Help
Type a question for help

Field Name	Data Type	Description
Censer ID	Number	
Decoration ID	Number	
Burning evidence ID	Number	
Manufacture ID	Number	
Base	Text	Values are: "None","Flat","Slightly rounded","Rounded","Incurved","Ring"
Lip	Text	Values are: "None","Rounded","Pointed","Squared","Beveled-out","Beveled-in","Grooved","Tick-notched","Scalloped-notched","Crenellated-notched"
Walls container	Text	Values are: "None","Incurved","Outcurved","Flared","Insloped","Rounded","Vertical"
Handle form	Text	Values are: "None","Rounded","Flat","Round with grooves on upper surface","Trough handle"
Handle structure	Text	Values are: "None","Solid","Hollow","Trough"
Hollow handle type	Text	Values are: "None","Not hollow","Communicated with vessel","Not communicated with vessel","Trough","Unknown"
Handle distal end structure	Text	Values are: "None","Open-ended","Closed"
Representations distal end	Text	Values are: "None","Yes","No"
Representation distal end type	Text	Values are: "None","No representations","Hand","Clawed feet","Spiked claws on upturned paw","Pellet claws","Crocodile","Snake"
Handle lower features	Text	Values are: "None","No lower features","Spike on underside at proximal end","Downward slope at proximal end","Conical support at or near distal end"
Handle perforations	Text	Values are: "None","No","No/incomplete"
Handle perforations form	Text	Values are: "None","No perforations","No perforations/incomplete","Rounded"
Handle perforations number	Number	
Handle perforations position	Text	Values are: "None","No perforations","No perforations/incomplete","Distal end","Proximal end"
Handle perforations disposition	Text	Values are: "None","No perforations","No perforations/incomplete","Aligned","Single perforation"
Base perforations	Text	Values are: "None","No","No/incomplete"
Base perforations form	Text	Values are: "None","No perforations","No perforations/incomplete","Round","Triangular","Cross shaped","Square shaped","Rectangular shaped"
Base perforations number	Number	
Base perforations position	Text	
Base perforations disposition	Text	
Handle length	Memo	
Handle width	Memo	
Base diameter	Memo	
Container rim diameter	Memo	
Walls container height	Memo	

Observations:

The value 'None' is used when the referred part of the censer does not exist. It is different from 'No' which is used to refer to the absence of an attribute when the part is present. The value 'No/incomplete' means that an attribute is not present in a part that is incomplete (so it could have been present if the part was complete).

Table 29 Decoration table of ladle censers with the fields and values given to its fields

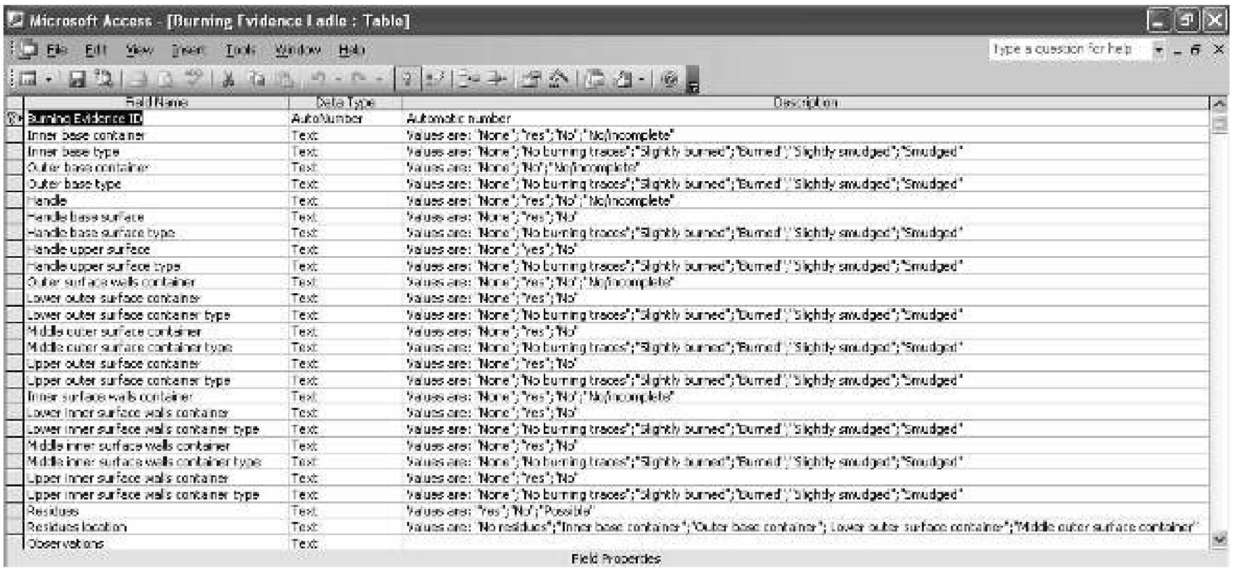


Field Name	Data Type	Description
Decoration ID	AutoNumber	Automatic number
Surface treatment inner surface container	Text	Values are: "None";"Slipped";"Unslipped"
Surface treatment outer surface container	Text	Values are: "None";"Slipped";"Unslipped"
Surface treatment handle	Text	Values are: "None";"Slipped";"Unslipped"
Surface colour	Text	
Munsel ID	Number	
Traces of paint	Yes/No	
Description of paint traces	Memo	
Handle decoration	Text	Values are: "None";"Yes";"No"
Handle decoration type	Text	Values are: "None";"No handle decoration";"Spikes";"Multiple circular decorative perforations";"Undetermined"
Distal handle representation	Text	Values are: "None";"Yes";"No"
Outer surface container decoration	Text	Values are: "None";"Yes";"No"
Outer surface container decoration type	Text	Values are: "None";"No decoration";"Spikes";"Applique finger-impressed fillets";"Applique notched-fillets";"Pellets"
Photograph	Hyperlink	
Observations	Memo	

Observations:

The value ‘None’ is used when the referred part of a censer does not exist. It is different from ‘No’ which means that there is no decoration in a part that is present.

Table 30 Burning evidence table for ladle censers with the fields and values given to its fields

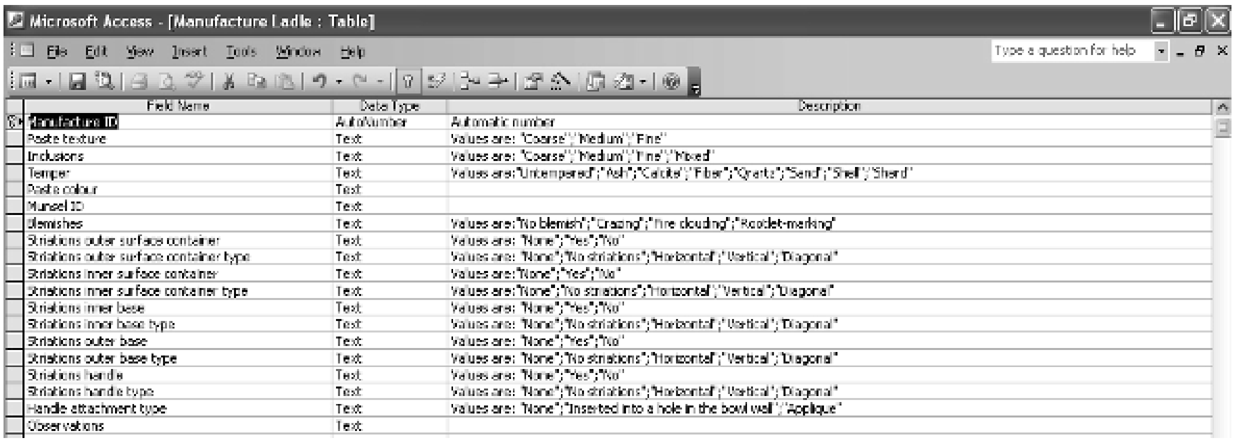


Field Name	Data Type	Description
Burning Evidence ID	AutoNumber	Automatic number
Inner base container	Text	Values are: "None";"Yes";"No";"No/incomplete"
Inner base type	Text	Values are: "None";"No burning traces";"Slightly burned";"Burned";"Slightly smudged";"Smudged"
Outer base container	Text	Values are: "None";"No";"No/incomplete"
Outer base type	Text	Values are: "None";"No burning traces";"Slightly burned";"Burned";"Slightly smudged";"Smudged"
Handle	Text	Values are: "None";"Yes";"No";"No/incomplete"
Handle base surface	Text	Values are: "None";"Yes";"No"
Handle base surface type	Text	Values are: "None";"No burning traces";"Slightly burned";"Burned";"Slightly smudged";"Smudged"
Handle upper surface	Text	Values are: "None";"Yes";"No"
Handle upper surface type	Text	Values are: "None";"No burning traces";"Slightly burned";"Burned";"Slightly smudged";"Smudged"
Outer surface walls container	Text	Values are: "None";"Yes";"No";"No/incomplete"
Lower outer surface container	Text	Values are: "None";"Yes";"No"
Lower outer surface container type	Text	Values are: "None";"No burning traces";"Slightly burned";"Burned";"Slightly smudged";"Smudged"
Middle outer surface container	Text	Values are: "None";"Yes";"No"
Middle outer surface container type	Text	Values are: "None";"No burning traces";"Slightly burned";"Burned";"Slightly smudged";"Smudged"
Upper outer surface container	Text	Values are: "None";"Yes";"No"
Upper outer surface container type	Text	Values are: "None";"No burning traces";"Slightly burned";"Burned";"Slightly smudged";"Smudged"
Inner surface walls container	Text	Values are: "None";"Yes";"No";"No/incomplete"
Lower inner surface walls container	Text	Values are: "None";"Yes";"No"
Lower inner surface walls container type	Text	Values are: "None";"No burning traces";"Slightly burned";"Burned";"Slightly smudged";"Smudged"
Middle inner surface walls container	Text	Values are: "None";"Yes";"No"
Middle inner surface walls container type	Text	Values are: "None";"No burning traces";"Slightly burned";"Burned";"Slightly smudged";"Smudged"
Upper inner surface walls container	Text	Values are: "None";"Yes";"No"
Upper inner surface walls container type	Text	Values are: "None";"No burning traces";"Slightly burned";"Burned";"Slightly smudged";"Smudged"
Residues	Text	Values are: "Yes";"No";"Possible"
Residues location	Text	Values are: "No residues";"Inner base container";"Outer base container";"Lower outer surface container";"Middle outer surface container"
Observations	Text	

Observations:

The value ‘None’ is used when the referred part of a censer does not exist. It is different from ‘No’ which means that there is no burning evidence in the referred part. Burning ‘type’ values refer to the degree with which a censer is burnt. Again, the value ‘None’ is used when the alluded part of the censer does not exist.

Table 31 Manufacture table of ladle censers with the fields and values given to its fields

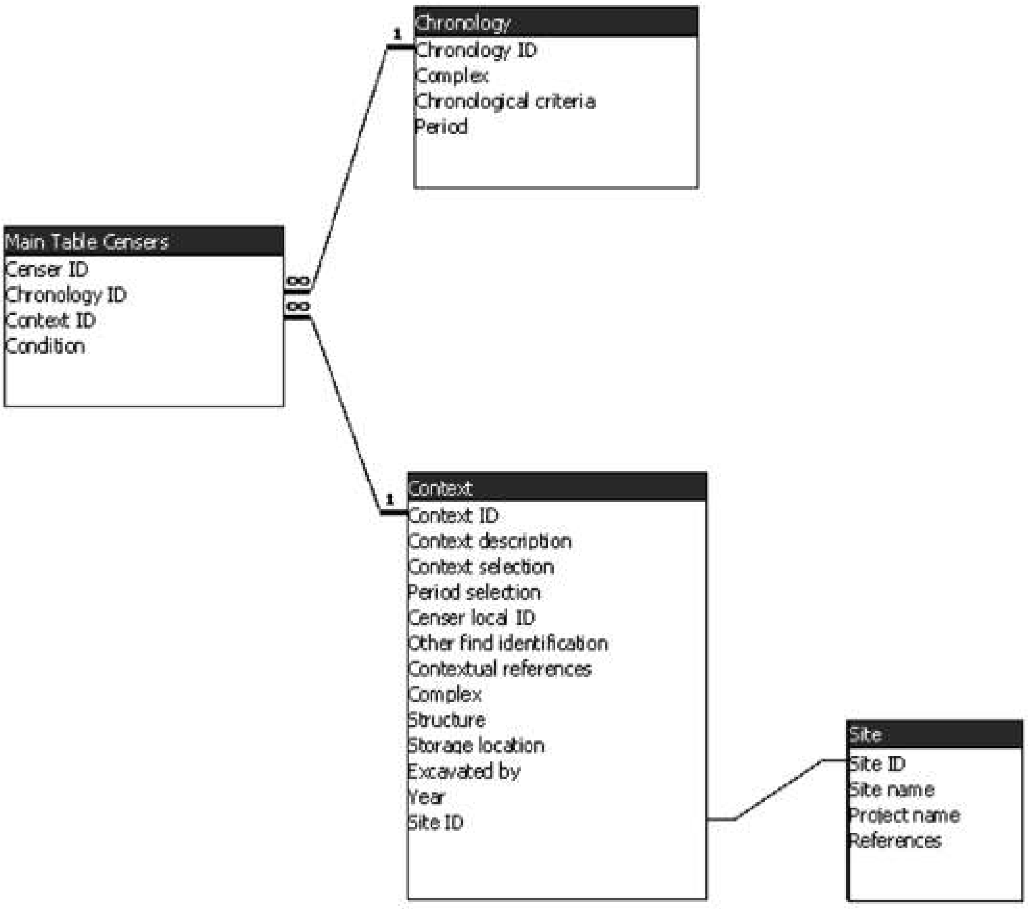


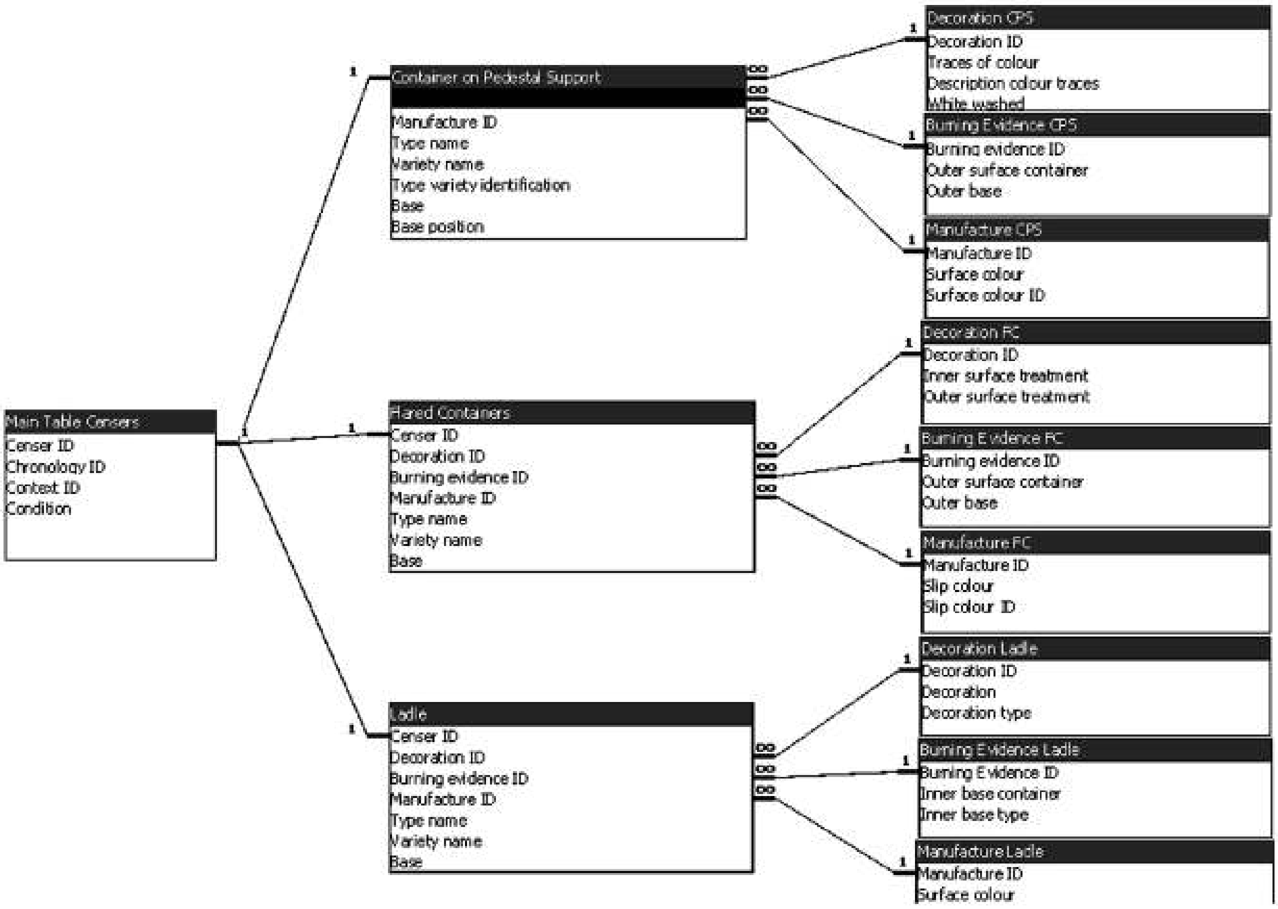
Field Name	Data Type	Description
Manufacture ID	AutoNumber	Automatic number
Paste texture	Text	Values are: "Coarse";"Medium";"Fine"
Inclusions	Text	Values are: "Coarse";"Medium";"Fine";"Mixed"
Temper	Text	Values are:"Untempered";"Ash";"Calcite";"Fiber";"Quartz";"Sand";"Shell";"Sherd"
Paste colour	Text	
Munsel ID	Text	
Blemishes	Text	Values are:"No blemish";"Crazing";"Fire clouding";"Rootlet-marking"
Striations outer surface container	Text	Values are: "None";"Yes";"No"
Striations outer surface container type	Text	Values are: "None";"No striations";"Horizontal";"Vertical";"Diagonal"
Striations inner surface container	Text	Values are:"None";"Yes";"No"
Striations inner surface container type	Text	Values are:"None";"No striations";"Horizontal";"Vertical";"Diagonal"
Striations inner base	Text	Values are: "None";"Yes";"No"
Striations inner base type	Text	Values are: "None";"No striations";"Horizontal";"Vertical";"Diagonal"
Striations outer base	Text	Values are: "None";"Yes";"No"
Striations outer base type	Text	Values are: "None";"No striations";"Horizontal";"Vertical";"Diagonal"
Striations handle	Text	Values are: "None";"Yes";"No"
Striations handle type	Text	Values are: "None";"No striations";"Horizontal";"Vertical";"Diagonal"
Handle attachment type	Text	Values are: "None";"Inserted into a hole in the bowl wall";"Applique"
Observations	Text	

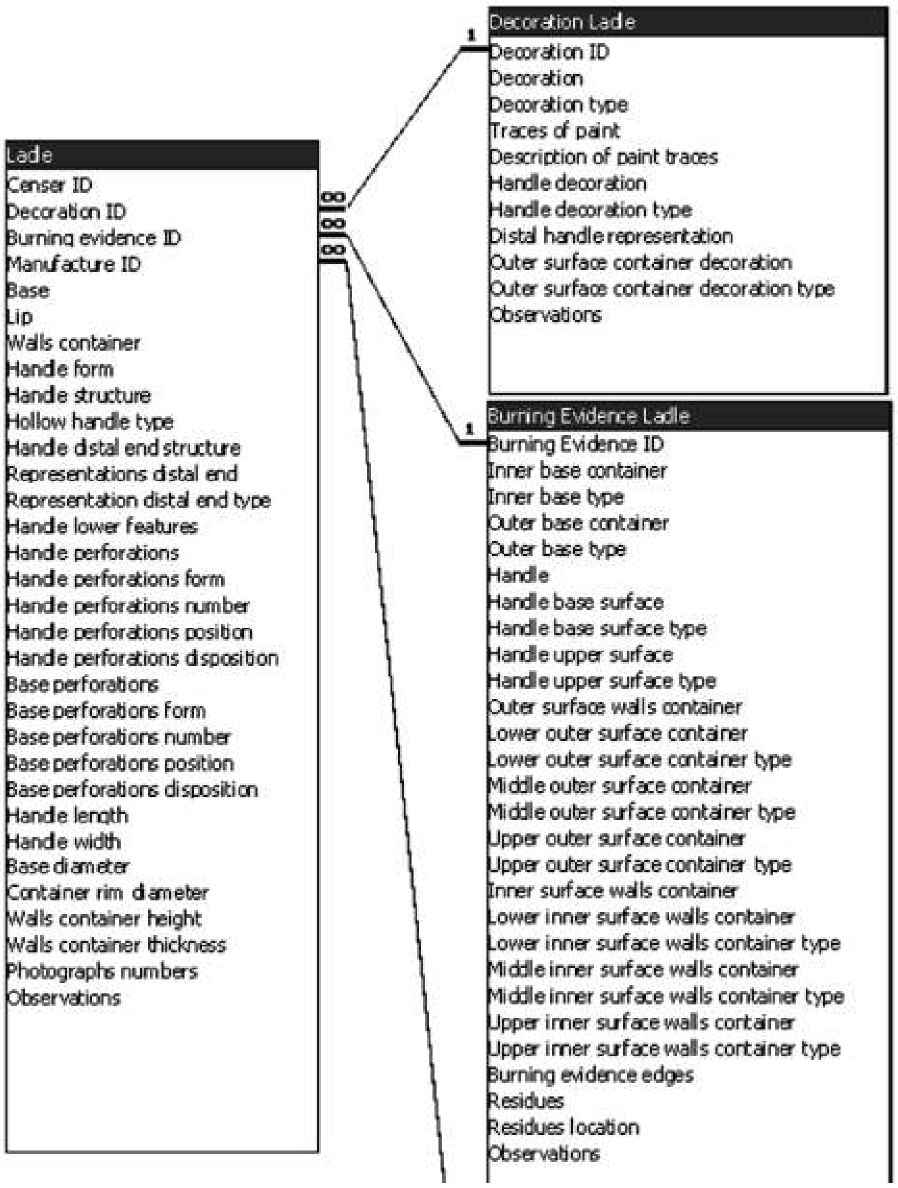
Observations:

The value ‘None’ is used when the referred part of the censer does not exist. It is different from ‘No’ which is used to mean that there are no striations in the referred part.

12.3.2. The design of the Censers Database






Decoration Ladle
1
Decoration ID
Decoration
Decoration type
Traces of paint
Description of paint traces
Handle decoration
Handle decoration type
Distal handle representation
Outer surface container decoration
Outer surface container decoration type
Observations
Ladle
Censer ID
Decoration ID
Burning evidence ID
Manufacture ID
Base
Lip
Walls container
Handle form
Handle structure
Hollow handle type
Handle distal end structure
Representations distal end
Representation distal end type
Handle lower features
Handle perforations
Handle perforations form
Handle perforations number
Handle perforations position
Handle perforations disposition
Base perforations
Base perforations form
Base perforations number
Base perforations position
Base perforations disposition
Handle length
Handle width
Base diameter
Container rim diameter
Walls container height
Walls container thickness
Photographs numbers
Observations
∞
∞
∞
Burning Evidence Ladle
1
Burning Evidence ID
Inner base container
Inner base type
Outer base container
Outer base type
Handle
Handle base surface
Handle base surface type
Handle upper surface
Handle upper surface type
Outer surface walls container
Lower outer surface container
Lower outer surface container type
Middle outer surface container
Middle outer surface container type
Upper outer surface container
Upper outer surface container type
Inner surface walls container
Lower inner surface walls container
Lower inner surface walls container type
Middle inner surface walls container
Middle inner surface walls container type
Upper inner surface walls container
Upper inner surface walls container type
Burning evidence edges
Residues
Residues location
Observations

12.4. SECTION D

The materials and their contexts of recovery presented in this Appendix are organized as follows: The category of 'Censer material' contains information about the kinds of censers found within a particular context or contexts within a structure and their identification. This category is followed by others which contain information about the site where the material was found and the name of the project under which the materials were excavated. 'Structure designation', 'Structure location', and 'Structure's occupational period' are categories used to present information about the Structure in which the censer/s were found, the Structure's location and its time of occupation.

The architectural information about the specific structure in which the materials were found is presented under the category 'Description of relevant construction phase'. This is followed by categories that include information about the specific context or contexts in which the materials were found within each structure and which involve the 'Context/s identification', 'Operation', 'Suboperation' and 'Lot', 'Level' or 'Unit' depending on the classification system used by each project. In cases in which the contextual information was not found in much detail but for which more general descriptions were found, the category 'Available contextual information' is used.

'Assigned period' usually refers to the date assigned to the materials by the archaeologists of the projects in various records provided to me and/or reports and publications. In cases where contextual information existed in more than one of these sources, the dates assigned for the materials from each context available in different sources were compared. When disagreements occurred, the directors of the projects or the ceramicists were contacted and a date for the materials was agreed upon. Differences in the dating of the materials in publications or reports have sometimes occurred due to the different status of research at different stages. The chronological basis of the censer materials for each context is presented under the subtitle 'Chronological basis', where I included as much relevant information as possible.

12.4.1. Late Classic Period

(A) Censer material: Two vases with an effigy face (310050, Figure 2a and 310385, Figure 2b)

Site: Aguateca

Project name: Proyecto Aguateca

Structure designation: M7-34

Structure location: Site epicentre, approximately 200 m northeast of the Main Plaza, adjacent to the east side of the causeway that unites the Main Plaza and the Palace Group.

Structure's occupational period: Late Classic

Description of relevant construction phase: Structure comprised a low platform supporting a building. The building was composed of three adjacent rooms aligned on a north-south axis. The basal platform measured 16 by 7.50 m and 0.30 m high. Each room was divided into a front and a rear part by walls running parallel to the axis of the building; the building had its own doorway and a high bench abutting the back wall. The floors of the rooms, the patio and the platform were originally stuccoed and the inner and outer walls of the building's façade were covered by a layer of white stucco with painted designs in black, red/orange, and blue based on the recovery of stucco fragments in several parts of the building. The recovered materials associated with this structure include a wide variety of ceramic vessels, grinding stones and *metates*, obsidian tools, flint instruments, and 'censers'. The structure is suggested to be non-residential with a function which is not clear. Based on the artefact assemblage, which included an unusually large number of *metates* (seven specimens) and 'censers', as well as on the architecture of the structure, different from other structures in the area considered residential, the excavators suggest that M7-34, sometimes referred to as 'the house of the metates', may have been a communal house used for feasting, gatherings, or rituals. Its location, architecture, and artefact inventory made excavators suggest that the users of this structure had a high social rank. A pattern of sudden abandonment of this structure is also suggested, given the large number of objects present on its floors. The objects recovered are interpreted as belonging to the final phase of use of the structure, their location indicating the areas where they were used last.

Context identification: 21A-16 and 47; and 21A-20, 21, 23, 28, 33 and 51

Operation: 21

Suboperation: A

Units: 16 and 47 were located in front of the Structure, on the patio floor. Vase 310050 was found in these units among other materials.

Units: 20, 21**,** 23, 28, 33 and 51 were also located in front of the Structure. Vase 310385 was found in these units among other materials.

Assigned period: Late Classic (Nacimiento phase)

Chronological basis: Ceramics. The highest percentage of the analyzed ceramics was represented by Encanto Striated, followed by Tinaja Red, Cambio Unslipped, and Polychrome Eroded. Pantano Impressed and Chaquiste Impressed were less representative, and a minimal part of the analyzed materials was Subin Red, Infierno Black, Saxcbe Palmar Orange Polychrome, Carmelita Incised, and Red slip.

References: Emery and Aoyama 2007; Ponciano and Inomata 2004; Ponciano *et al*. 1998; and Valdés *et al*. 2000

(B) Censer material: A censer fragment (Figure 3)

Site: Aguateca

Project name: Proyecto Arqueológico Regional Petexbatun

Structure designation: M8-17

Structure location: Site epicentre, along the east side of the Causeway, south of wall M8-3

Structure's occupational period: Late Classic

Description of relevant construction phase: Only the west part of the structure was excavated. The building was square-shaped, was supported by two basal platforms, and was approximately 6 m long by 4.8 m wide. The building's interior is reported to have possibly been divided into three rooms by partitions parallel to the front and back walls. The estimated height of the external walls of the building was 1.10 m in its west side, the interior wall being a bit lower. The rest of the building would have been of perishable material. The amount of materials recovered from M8-17 is reported to be relatively small in relation to the amount of materials recovered from other structures excavated in the area. Among the excavated materials were two complete stingray spines, a broken incense burner, and figurines. The structure is suggested to have been a shrine, based on its floor plan, similar to temples known in the Maya area (although M8-17 is lower and smaller), and the materials recovered in its interior.

Context identification: AG5 E

Operation: AG5, located around wall M8-3 that goes through the causway

Suboperation: E, Structure M8-17 and test excavations in immediate surroundings

Available contextual information: A censer fragment was found in the building's antechamber

Assigned period: Late Classic

Chronological basis: Ceramics (Encanto Striated, Cambio Unslipped, Subin Red, Tinaja Red, Chaquiste and Pantano Impressed, and Saxche-Palmar polychromes).

References: Inomata and Moscoso 1991: 466-527; Inomata and Stiver 1998: 431-452

(C) Censer material: Twenty seven fragments (Figures 4 and 5) including an earplug (607363 n.1, Figure 5a), fragments of a vessel (607359 n.1, Figure 5b), possible 'Mixtec style' censer fragments (Figures 4d, e, and f), and several unidentified decorative fragments

Site: Dos Pilas

Project name: Proyecto Arqueológico Regional Petexbatun

Structure designation: P5-7 also referred to as 'El Duende'

Structure location: Approximately 1 km east of the Central Plaza

Structure's occupational period: Late Classic

Description of relevant construction phase: High, terraced platform with a vaulted building resting on top. The Structure lies on five natural terraces artificially modified and measures 20 m high. Its building was composed of an extended chamber 18 m long and 1.6 m wide with three doorways, the central of which was the widest and measured 2.10 m wide. The façade of the building consisted of limestone blocks well carved, and coated with modelled stucco painted in red. The floors were also stuccoed and painted in red. At the centre of the building there were three plain stone panels numbered 15, 16 and 18. In front of the central panel there was a small altar at the normative axis of the structure. A bench was found at the base of the façade walls. The temple was accessed through an outset stairway with balustrades. Associated with the Structure were thirteen monuments dated to the Late Classic period.

Contexts identification: DP8A-9-3 and DP8A-10-3

Operation: DP8A, excavations of the structure's building

Unit: 9, 1.50 by 1.50 m unit located in the interior of the buildings' room along its central axis and directly on Floor 1 of the building. Floor 2 had a cut in its surface and an alignment of limestones. Excavations below these stones revealed a deposit (Deposit 4) of broken sherds, burned stones and charcoal representative of activities that would have involved the burning of resins and breakage of vessels and incense burners. Below these materials, other artifacts were found including obsidians and flint 'eccentrics' of various forms, prismatic blades, a phalanx bone, *Spondylus* fragments, and fragments of painted sculpture. Because the deposit was in loose fill its depositional pattern was not possible to determine.

Unit: 10, 1.50 m by 2 m unit located on the central northeastern wall of the façade between the east and central entrances of the temple.

Assigned period: Late Classic

Chronological basis: Preliminary results indicated that all the ceramics found in the Structure date to the Late Classic period. The most common type was Encanto Striated encompassing more than half of the ceramic sample of El Duende. In its characteristic jar form, this type was especially associated with the burials found. Terminal Classic ceramics were not found.

References: Escobedo *et al*. 1990: 277-304

(D) Censer material: Various fragments including a hollow cylindrical stand with flanges and what is likely a Jaguar/Sun representation (614924 n.2, Figures 6 a, b), an earplug (614924 n.2, Figure 7a), a spiked sherd (614973 n.1, Figure 7b), and a small container with outflared walls (614960 n.1, Figure 7c)

Site: Dos Pilas

Project name: Proyecto Arqueológico Regional Petexbatun

Structure designation: K4-2

Structure location: In Group K4-1, a residential group of modest constructions in low terrain, located 200 m northeast of the Main Plaza, in the east side of the group's Plaza

Structure's occupational period: Late Classic

Description of relevant construction phase: Long building which lies on a low platform. The building, which measured 7 m long and 2.5 m wide, rests on a platform that was 7 m long, 2 m wide and approximately 25 cm high. The platform had an extension to the front and west of the building. A perishable roof for the building was suggested. Among the objects found on the platform were broken pieces of an incense burner, a hieroglyphic panel, sherds, fragmented figurines, flint artefacts, and two fragments of grinding stone *manos*. Some of these could have been part of the core of the structure.

Context identification: DP15J-2-1, DP15J-2-2, DP15J-8-2, DP-15J-6-1, DP15J-6-3

Operation: DP15, excavations in Group K4-1

Suboperation: J, excavations in Structure K4-2

Available contextual information: Broken pieces of an incense burner were found on the platform of the structure near a hieroglyphic and iconographic panel. The panel (#19) was found upside-down during excavations of the platform and it was suggested to have been part of the exterior wall of the main structure on the central axis of the Structure. The text and representation on the panel may allude to a blood ritual being conducted on a child while Lord 3 observes.

Assigned period: Late Classic

Chronological basis: Ceramics. The ceramics excavated in K4-2 and other Structures in the group were dated to the Late Classic period.

References: Palka 1990: 146-165

(E) Censer material: Hollow cylindrical stand with flanges and what is likely a Jaguar/Sun representation (PNT 020, Figure 8)

Site: Tikal

Project name: Proyecto Nacional Tikal

Structure designation: 6C-50-2

Structure location: Group 6C-XV, 300 m south of Mundo Perdido, on the east side of the group

Structure's occupational period: Late Classic

Description of relevant construction phase: Masonry vaulted building with two longitudinal rooms and a stairway on its platform

Available contextual information: Cylindrical stand with an effigy representation that was found in a frontal niche that divides the stairs of the Structure's platform in two stairways (Juan Pedro Laporte, personal communication, 2006).

Assigned period: Late Classic

Chronological basis: Imix ceramics and stratigraphy

References: Laporte and Iglesias 1999: 32-57

(F) Censer material: Spiked 'bucket'-like vessel (A-326, Figure 9)

Site: Ixkun

Project name: Atlas Arqueológico de Guatemala

Structure designation: East Structure

Structure location: Patio 1 in Group 10-B, a residential group located on the top of a natural hill in the southeast sector of Ixkun

Structure's occupational period: Early Classic and Late Classic

Description of relevant construction phase: N/A Map only

Context identification number: 1-540-4

Operation: 1, Ixkun

Suboperation: 540, test pit in the centre of the East Structure in Patio 1

Lot: 4, consisted of burial 244. The burial was primary and indirect and associated with it were a spiked 'bucket'-like vessel (A-326) and two polychrome hemispheric vessels of the ceramic type Saxche Orange Polychrome: Saxche. The buried individual was in an extended dorsal decubitus position with a north-south orientation, and with its cranium located to the north. One of the two polychrome vessels contained the skull of the individual and the other one was located by its feet. The censer was found next to the vessel that contained the skull.

Assigned period: Late Classic (Tepeu 1 sphere)

Chronological basis: Ceramics

References: Laporte and Mejía 2005: 113-160.

(G) Ceramic material: Two spiked 'bucket'-like vessels (PN 41D-16-2 421A and PN 41D-16-2 421B, Figures 10a), an inward curving, pedestal-based container, much like a *tecomate*, referred to by its excavators as a 'chalice' vessel (Figure 10b), and a 'polychrome cylinder'

Site: Piedras Negras

Project name: Proyecto Piedras Negras

Structure designation: C-12

Structure location: Group C, South Plaza, located northeast of the Acropolis. The function of the group is not clear but a mainly ritual and administrative function has been suggested. The location, architecture, and materials excavated from this group suggest a high status of its occupants.

Structure's occupational period: Unit 22, a central pit excavated in Structure C-12 up to the level of the bedrock. The unit is reported to have contained Chacalhaaz, Yaxche and Balche deposits.

Description of relevant construction phase: Only the eastern side of the structure with its surrounding area was excavated. The eastern top of the mound was composed of two rooms one of which contained a bench with a niche. A stairway with wide risers was uncovered on the southern side of the structure. The function of the Structure is unclear, but may have been ritual or administrative, used by individuals of a high status in society.

Context identification: PN 41D-16-2 and PN 41D-12-2

Operation: PN 41, excavations in Structures C-12 and C-10 in the South Plaza of Group C

Suboperation: D, 36 excavation units in the eastern section of Structure C-12 and immediate surroundings

Unit: 16, was located in one of the rooms of structure C-12

Lot: 2, (0.36 m) contained collapse mixed with fill (perhaps representing a midden). The soil was fine, loose, and had a greyish brown colour. Among the artifacts excavated in the lot were two spiked vessels found *in situ* in the niche of a bench and a 'polychrome cylinder' also recovered *in situ* on one of the room's corners. The spiked vessels and the cylinder were found on the floor of the building. The spiked vessels are burned in their interior and the 'polychrome cylinder' found in a very fragmented condition is also reported to have been burned in its interior (no photos or drawings have been made of this specimen which has not been reconstructed). Other materials reported from this lot were sherds, figurine fragments, obsidian and flint fragments, bones (some of which were worked), and a human bone (possibly a finger).

Unit: 12, located within two rooms of C-12

Lot: 2 (0.24 m), located in the central room of the northern half of the structure. The lot consisted of fill of a fine and loose soil of a greyish brown colour. Among the materials found in this lot were a vessel in the form of a 'chalice', sherds, figurine fragments, obsidian fragments, bones, a worked bone, and a fragment of pumice.

Assigned period: Late Classic (Chacalhaaz ceramic phase A.D. 750-850)

Chronological basis: Ceramics and stratigraphy

References: Houston *et al.* 2000; Jackson 2001, 2002: 806-809

(H) Censer material: Two hollow cylindrical stands with flanges and what is likely a Jaguar/Sun representation and three seated-effigy covers (Figure 11)

Site: Tikal

Project name: Proyecto Templo V

Structure designation: 5D-5 (Temple V)

Structure location: East of the South Acropolis

Structure's occupational period: Late Classic (A.D. 600-800)

Description of relevant construction phase: High, terraced platform with a vaulted masonry building. The building was composed of one room and had a roof comb. The substructure measured 52 m long, 36 m wide and 30 m high. Its central stairway was 20 m wide.

Available contextual information: What the excavators classified as an offering (PTV-2) of censers was found in the north-south axis of the Structure, in the platform core. It consisted of an assemblage of incense burners placed in east-west alignment. The assemblage consisted of two flanged effigy cylindrical stands with no base placed on the ends and three seated-effigy covers aligned between them. The censers were found in a context of wood and possibly resin burning and were fractured, smudged, and with several burning traces. The space of the offering was filled with the same core materials as the rest of the substructure. A burial (PTV-2) was also found along the north-south axis of the building in the bedrock and was aligned with the axis of the upper room of the temple.

Assigned period: Early Late Classic (Ik complex)

Chronological basis: The chronology of the censers was assigned on the basis of the frequencies of a sample of ceramic materials from different periods recovered from the core of the temple's substructure. Late Preclassic materials were estimated to represent 1% of the sample, Early Classic materials 50%, and Late Classic materials 49% of the sample. The frequencies of the ceramic types dated to the Early Classic and Late Classic periods led the authors to suggest that the building was constructed during the transition from the Early to Late Classic period.

Among the most represented Early Classic period pottery were unslipped ceramics of the Quintal Group which consisted of 50% of the sample. Ceramics of the Aguila Group represented 26% of the sample, Balanza 12%, Pucte 5% and Maaz 3.6%. During the Late Classic period the unslipped ceramics of the Cambio Group were reduced to 15.5%, the red pottery of the Tinaja Group represented 39% of the sample, the Café pottery of the Maquina Group was increased to 10.8%, and the Infierno Group was reduced to 6.9% of the sample. The use of polychrome ceramics in this period was noted, the Saxche Group representing 16% of the total sample.

References: Gómez 1998: 174-182

(I) Censer material: A seated-effigy cover (12U-82a/16, Figure 12a), a flanged zoomorphic censer with base (12U-82b/16, Figure 12b), two hollow cylindrical stands with flanges and what is likely a Jaguar/Sun representation (12U-84a/16, Figure 12c and 12U-84b/16, Figure 13a), a spiked pedestal-based vessel (12U-85/16, Figure 13b), two spiked hollow cylindrical stands (12U-86a/16, Figure 13c and 12U-86b/16, Figure 13d) and some unfitted fragments

Site: Tikal

Project name: Tikal Project

Structure designation: 5D-32

Structure location: North Acropolis

Structure's occupational period: Early Classic to Late Classic, but some Eznab (Terminal Classic) ceramics were also reported in the back chamber on or close to the floor.

Description of relevant construction phase: High, terraced platform with a vaulted masonry building on top composed of three tandem rooms. Room 3 had a 'bench' against the back wall centre constructed on floor 1, the final surface of the building. The building had a central stairway with broad, receding mask panels along its sides and a roof comb. The construction of the structure was dated to the Intermediate Classic period or Ik Complex.

Context identification number: 12U/16

Operation: 12, North Acropolis, North Terrace and North Stairway

Suboperation: U, excavations of the rooms of the building of Structure 5D-32

Lot: 16, Str. 5D-32-1st, Room 3, centre rear, excavation through Unit 1 (bench). Offering composed of pottery incense burners located in a timber roof chamber. The excavation of the chamber began on charred Floor 3 and was then sealed by Floor 2. The offering is thought to have been disrupted in later times and it was therefore named Problematical Deposit 180. Its main content consisted of shattered pottery censers found from 0.20 m below floor level to almost the bottom of the pit. Some censers could be reconstructed from approximately two thirds to nearly whole and there was also a remainder of unfitted fragments. A number of sherds which belonged to two of the censers in the offering (12U-84a, b) where found in Problematical Deposits in the eastern part of Room 3 and in general room debris (12U/1).

Assigned period: Early Late Classic

Chronological basis: Ceramics and stratigraphy were found outside the chamber elsewhere in the temple, and later placed where they were found, at a central place in Maya cosmology in alignment with what may have been an altar.

References: W.R. Coe 1990: 573-574

(J) Censer material: A hollow flanged pedestal-based censer (?) (12K-130/10, 15, Figure 14a), and two seated-effigy covers (12K-396/4, 15, 17, Figure 14b and 12K-131/10 as written on the object but recorded by Ferree in her list of figures as 12K-131/15, Figure 14c)

Site: Tikal

Project name: Tikal Project

Structure designation: 5D-33

Structure location: North Acropolis

Structure's occupational period: From 9.1.1.10.10 and to have ended at about 9.11.0.0.0 to 9.12.0.0.0. The construction of the last phase, 5D-33-1st is dated to the Late Classic period and its use extended into Postclassic times as evidenced by the presence of Caban pottery thought to have occurred after the abandonment of the structure based on the presence of small mammal bone accumulations and initial collapse. Probable Eznab (Terminal Classic) sherds are reported in Lot 12L/1 (surface down to 0.20 m above room floors) and in lot 12L/7 (in the substructure's debris).

Description of relevant construction phase: High, terraced platform with a masonry building on top composed of two chambers, the front one wider than the rear one. The upper façade and presumed roof comb are believed to have had elaborate stuccowork. The construction of structure 5D-33-2nd is dated to the late Early Classic period and its use extended well into the Ik Complex or Intermediate Classic period.

Context identification: 12K/4, 10, 15, 17

Operation: 12, Group 5D-2 (North Terrace and North Acropolis)

Suboperation: K, axial tunnel of structure 5D-33

Lot: 4, structure 5D-33-2nd, Unit 31. This unit is described as ‘a brief expanse of earthy burned debris’ at the Unit 2 stair bottom. The unit was composed of charcoal, and censer parts, some with reported inter-lot fits with fragments in Room 2.

Lot: 17, structure 5D-33-2nd, Unit 71. This unit consisted of a 2-3 cm thick accumulation of black-brown dirt with censer parts, charcoal, and sherds as well as fragments of monuments. The material significantly covered the stela 31 pit’s patchwork and the west portion of the room. South of this trash and west of the stela numerous burned fragments of monuments were recovered together with censer and vessel fragments.

Lots: 10 and 15, structure 5D-33-2nd, room fill lots of structure 5D-33-2nd.

The materials from these lots are interpreted as the result of terminal activity correlating with 33-1st which included the partial breakage of Stela 31.

Assigned period: Intermediate Classic (Late Classic) (Ik Complex)

Chronological basis: Stratigraphy and ceramics

References: W.R. Coe 1990: 510-527; Tikal Lot cards

(K) Censer material: A ladle censer (5D-5-25-9B) and a vessel with high walls and an everted rim (5D-5-25-9A), Figure 15

Site: Tikal

Project name: Proyecto Templo V

Structure designation: Structure 5D-5 (Temple V)

Structure location: East of the South Acropolis

Structure’s occupational period: Late Classic

Description of relevant construction phase: High, terraced platform with a vaulted building on top. The building was composed of one room only and a roof comb. The substructure was 52 m long, 36 m wide and 30 m high. Its central stairway was 20 m wide. The construction of the temple was dated to the Late Classic period (A.D. 600-800) and it was constructed in one phase.

Context identification: 5D-5-25-9

Operation: 5D-5

Suboperation: 25, tunnel excavated in the north-south axis of the terraced platform. The tunnel was 33 m deep, 0.90 m wide and 1.90 m high.

Lot: 9, burial PTV-2, excavated in bedrock along the axis of the upper room. The burial was made after the construction of Floor 2 of the basal platform. It consisted of a cist covered by wood, as it was evidenced by the holes where the beams were deposited and the marks of the jambs left in the mixture that covered the wooden beams. The beams were approximately 1.35 m long and 0.20 m wide. The cist was 0.35 m deep, 0.50 m wide and 0.70 m long. An offering was deposited on the wood of the cist’s roof which consisted of two ceramic vessels: a bowl of flat base, tall outcurved sides, direct rim and a bevelled lip (5D-5-25-9A) and a ladle censer (5D-5-25-9B) that was found facing down and within the other vessel which was facing up. The burial was secondary, and given the small size of the cist and the estimated height of the individual (1.62 m) the excavators suggest it could have been an ossuary.

Assigned period: early Late Classic (A.D. 600 ± 50)

Chronological basis: Oswaldo Gómez noted that although the high and outcurved sides of vessel 5D-5-25-9A would place it closer to the Early Classic forms, the analysis of ceramic materials recovered from the substructure suggest a date of A.D. 600 ± 50, which is also the time during which the burial would have been constructed. The distribution of ceramic materials represented was the following: Late Preclassic 1%, Early Classic 50%, and Late Classic 49%. According to the author, the relative balance between the frequencies of the Early Classic and Late Classic ceramic types suggests that the building would have been constructed from the Early to Late Classic period.

References: Gómez 1998: 174-182

(L) Censer material: A container with outflared walls (306882 DPA 159, Figure 16)

Site: Aguateca

Project name: Proyecto Arqueológico Regional Petexbatún

Structure designation: M8-10

Structure location: Elite residential area south of the Palace Group and to the east of the Causeway

Structure’s occupational period: Late Classic

Description of relevant construction phase: Range structure with five rooms facing to the east with separate doorways. The structure was composed of three rooms, the north, central and south rooms, and two additions to these called the north and south additions. The north, central and south rooms had benches which occupied the back half of the rooms and higher floors than the other two rooms, which were smaller and without benches. The bench of the central room had a niche. An adult burial was found in the central room in front of the bench and the burial of an infant was also found in the south room. The construction of the three main rooms is dated to the early stage of the Late Classic occupation at Aguateca, and its use until the final abandonment of Aguateca’s epicentre. This structure has been called the ‘House of the Scribe’ due to the presence of artefacts interpreted as being implements of a scribe. It was also interpreted as being most likely the residence of an elite scribe and nuclear family given the presence of utilitarian objects as well as prestige goods found in the home. The latter included shell ornaments, carved bones, and greenstone objects, and several artefacts suggesting a strong connection to the Royal family.

Context identification: AG 14A-4-4h

Operation: 14

Suboperation: A, Structure M8-10

Unit: 4, grid N10E6, the front part of the north room and a small portion of the central room

Lot: 4, artifacts on the floor of the north room. Among the artefacts was a bowl (306882) which had a distinctive pattern of resin burning on its inner surface.

Assigned period: Late Classic

Chronological basis: Most artefacts were reported to be typical of the Late Classic period. The structure is suggested to have been occupied until the final abandonment of the Aguateca center.

References: Inomata 1995: 216-230, 868

12.4.2. Terminal Classic Period

(M) Censer material: A flanged zoomorphic pedestal-based censer (87-24, Figure 17) and a ladle censer (87-25, Figure 18)

Site: Altar de Sacrificios

Project name: Altar de Sacrificios

Structure designation: Mound 24

Structure location: Approximately 600 m west of the North Plaza

Structure's occupational period: Preclassic to Late Boca (Xe, San Felix, Salinas-Late Plancha, Late Pasion, Early Boca, and Late Boca occupations following this stratigraphic order)

Description of relevant construction phase: Low mound with a raised rectangular area on its southeast corner. The mound was 2.5 m high.

Context identification: 90 (A)3

Operation: 90, excavation in Mound 24

Suboperation: (A), a 2 by 1.5 m pit sunk in 20 cm levels carried down to 5.4 m.

Level: 3, mainly composed of Late Boca ceramics, Plancha admixture and one Salinas sherd. In this level and in the north wall of the pit Cache 53 was found. The cache was composed of two incense burners. A pedestal-based effigy vessel (87-24) with its lid (87-23, not illustrated here) and a ladle censer (87-25).

Assigned period: Terminal Classic (Late Boca phase A.D. 830-909)

Chronological basis: Stratigraphy and ceramics. According to Smith,

> [t]he cache, although in Level 3, was bisected by the layer of burnt soil which on the west profile separates the upper two Late Boca levels from the Early Boca Levels 3 and 4. This burned soil layer descended to the west so that it was at the base of Level 3 in the northeast corner of the pit. Assuming this to be the actual demarcation line between Early and Late Boca, the cache would be phased as Late Boca partly intrusive into Early Boca levels (R.E. Smith 1972: 241).

References: Adams 1971; R.E. Smith 1972: 241, 171-173

(N) Censer material: Censer fragments (PSPI 174, 176, 173, 177, and 175, Figure 19) including earplugs, a flange fragment, and a fragment with a face representation

Site: Suk Che' 9

Project name: Atlas Arqueológico de Guatemala

Structure designation: Structure 2

Structure location: 600 m northwest of the central area of the site of Suk Che' in a group called Suk Che' 9 which was classified as a Complex Residential Unit (*Unidad Habitacional Compleja*) in which 37 identified structures were found. Structure 2 was located in Sector A of Suk Che' 9. Sector A covered the extension of a hill that dominates Suk Che' 9. Structure 2 may have been the main structure of Suk Che' 9, given its height and privileged location at the top of the hill.

Structure's occupational period: Late Classic and Terminal Classic

Description of relevant construction phase: The structure rests on a rounded platform that reaches 18.50 m north-south and 17.60 m east-west. It was covered with stucco and painted with red pigment.

Context identification: 11-52-5

Operation: 11, Suk Che'

Suboperation: 52, structure 2, Sector A

Lot: 5, '*Escondite* 29'. The escondite (cache) was located in the northwest corner of the structure on its uppermost floor. It consisted of a concentration of broken incense burners (PSPI 173, 174, 175, 176 and 177) and charcoal.

Assigned period: Terminal Classic

Chronological basis: Ceramics and stratigraphy.

References: Iglesias and Ciudad 1994: 310-327

(O) Censer material: A flange fragment (PSPI 73, Figure 20)

Site: Ixtonton

Project name: Atlas Arqueológico de Guatemala

Structure designation: Structure 30, a Structure with an apsidal floor plan, which had two construction phases. Only one wall of the first construction was identified. The remains of a stela (Stela 10) were associated with this first construction. The construction of the later phase consisted of a platform the lower terrace of which was apsidal with another upper rectangular terrace with no building on top. Stela 9 was found in front of this second structure.

Structure location: Approximately 18 m northwest of Ball Court 2, on the surface of the South Causeway

Structure's occupational period: Late Classic and Terminal Classic

Description of relevant construction phase: Only one wall of the first construction phase was identified; it was the back wall of a compound on which another construction was later built**.** The compound was 4.80 m long and 3.20 m wide. Associated with the former structure were the remains of Stela 10 found on the core of the stair of the second phase, along the primary axis. Another stela (Stela 9) was erected in association with the lower steps of the construction of the stair of the second phase of Structure 30.

Context identification number: 5-170-4

Operation: 5, Ixtonton

Suboperation: 170, structure 30

Lot: 4, a concentration of materials and '*Escondite* 12' within the compound of the earlier construction phase of the building. The materials were found in a layer of black burned earth, abundant charcoal and some large stones, fragments of different censers and abundant Terminal Classic ceramic material including polychrome sherds (Palmar-Danta Orange Polychrome), impressed sherds (Chaquiste Impressed), ceramics of the Tinaja Group, and fragments of slate artefacts. The layer reached 0.80 m in thickness. The walls of the room also showed burning evidence.

Assigned period: Terminal Classic

Chronological basis: Ceramics and stratigraphy

References: Laporte *et al*. 1991

(P) Censer material: A ladle censer (PSPI 503, Figure 21a), two ladle censer handles (PSPI 502, Figure 21b and PSPI 663, Figure 21c), an incomplete ladle censer container (Figures 21d), fragments of other censer material (Figures 21e, f), and figurine heads (Figure 21g)

Site: El Reinado or NI'TUUNAL

Project name: Atlas Arqueológico de Guatemala

Structure designation: Southwest structure

Structure location: Acropolis, Plaza A

Structure's occupational period: Late Classic (or earlier) to Terminal Classic

Description of relevant construction phase: Vaulted building that shared walls with adjacent structures to the south and west. The room of the building had two access points, a 1.20 m wide access facing Patio 1 and a 0.60 m wide access facing Patio 3. The two accesses were sealed. The access facing Patio 3 was possibly sealed during the second construction phase of the buildings in Patio 1. The access facing Patio 1 would have been sealed consequently, during the third construction phase of the buildings in Patio 1.

Context identification: 268-13-2

Operation: 268, El Reinado

Suboperation: 13, excavations on the southwest Structure of the Acropolis

Lot: 2, test pit in the room, burnt soil on the floor, '*Escondite* 84'. The escondite (cache) consisted of a layer of burnt residues and materials found on the floor of the room in the access to Patio 3. It was interpreted as having taken place upon the closure of the room during the third construction phase in Patio 1 during the Terminal Classic period. The contents of the escondite (cache) were as follows:

2 ladle containers

19 fragments of handles of ladle censers

2 semi-complete handles of ladle censers

2 fragments of a spiked incense burner

1 fragment of a vase with flat base and outcurved walls modelled and appliqué fragments of incense burner material

2 small appliqué fragments of unidentified censers

6 figurine heads

7 obsidian blades

6 fragments of obsidian blades

1 fragment of a flint knife

Assigned period: Terminal Classic

Chronological basis: Stratigraphy and ceramics

References: Mejía and Laporte 2004: 190-242

(Q) Censer material: A ladle fragment (PSPI 22, Figure 22a), a ladle censer (PSPI 23, Figure 22b), and a small container with outflared walls (PSPI 24, Figure 22c)

Site: Aktun Ak'Ab cave or Cueva Chavez

Project name: Atlas Arqueológico de Guatemala

Cave location: Cuenca alta of the Mopan River, Municipality of Dolores**,** 10 km northwest of the settlement of Dolores

Cave's occupational period: Late Preclassic, Early Classic, Late Classic and Postclassic (possibly Early Postclassic)

Location within cave: Chamber 12 (E)

Context identification: 30-12-13-1

Operation: 30, Aktun Ak'Ab cave

Suboperation: 12, Chamber 12

Lot: 13, collection of surface materials in Chamber E. Among the surface materials collected were two ladle censers (PSPI 022 and PSPI 023) and a small container with outflared walls (PSPA 24). Also recovered from the surface of the chamber were a tripod plate (PSPA 403, ware: Peten Lustroso, ceramic group: Tinaja, type: Camaron Inciso, Variety: Camaron) and another vessel (PSPA 402, ware Uaxactun sin Engobe, ceramic group: Cambio, type: Cambio sin Engobe, variety: Not specified), both dated to the Terminal Classic period (Ixmabuy Complex, Tepeu 3 sphere).

Assigned period: Terminal Classic

Chronological basis: Ceramics

References: Rodas *et al*. 1993: 91-104

(R) Censer material: The material included fragments of seated-effigy covers (135A-347, -605/27, 44 as recorded by Ferree in her list of figures but 135A-605/44 and 135A-322/27 PD 191 according to the information written on the figure, Figures 23 and 24a), (135A-629/27, 67, 88, Figure 24b) and (135A-352/44 and 135A/88, Figure 24c). Also in this category is part of the effigy headdress of a seated-effigy cover recorded by Ferree as 135A-560/24 [-328] but 135A/44 and 3, 135A-661/88 PD 193, 135A-662/27, 135A-662/95 PD 202 as written on the headdress's fragments, Figure 27a). Associated with this context were also part of a hollow cylindrical stand with flanges and what is likely the Jaguar/Sun representation (135A/44; -618/19 as written on the stand, Figure 24d), a spiked sherd (135A-485/48, 88, not illustrated here) (Ferree

1972: Figure 30g), two censer effigy masks (135A-597/27; -287/16,7; -297/88, Figure 25a and 135A-608/44;-587/67, Figure 25d, which was part of a flanged hollow cylinder as illustrated by Ferree 1972: Fig. 18b), the fragment of an effigy mask that may have belonged to a seated-effigy cover (135A-613/44, Figure 25c), fragments of a hollow cylindrical stand with flanges with a possible human effigy representation (135A-598/44, Figure 26a), and other censer fragments (135A-324/88, Figure 26b and 135A-319/88, Figure 25b).

Site: Uolantun

Project name: Tikal Project

Structure designation: SE-486

Structure location: Uolantun, south west area

Structure's occupational period: Construction date (?) till Terminal Classic period

Description of construction phase: High, terraced structure measuring 23 m long, 20 m wide, and 10 m high, with a vaulted and masonry building of two tandem rooms on top (a temple).

Context identification: 135A/44, 45, 48, 88, 96

Operation: 135, peripheral investigations, Uolantun

Suboperation: A, structure SE-486

Lot: 44, is described as 'PD. 193. On floor of first room of temple building. Large deposit of incensarios and pots, hearth, etc. See also lot 88'. The contents of this lot were carbon fragments, copal fragments, pottery censer fragments, partially reconstructable vessels, a pottery figurine fragment, a pottery figurine head, and a drum.

Lot: 45, is described as 'PD.193. Uolantun. Beneath lot 44 in front room of AUROCHS structure. Grey powdery deposit which was definitely pre-collapse. Many sherds of lot 44 were intermingled with this lot, though … the floor through it'. Contents were sherds and censer fragments.

Lot: 48, is described as 'PD. 193. Uolantun, Main Temple. Contents, floor of inner room on top of temple. All sherds were found in a 10 cm layer of grey ash on floor'. The contents of this lot were an obsidian flake blade, pottery censer fragments, and a pottery partially reconstructable vessel. Evaluation: Tepeu, including Eznab. Some possible Tzakol bodies. A cross fit is identified with 135A/27.

Lot: 88, is described as 'PD. 193. Equivalent of lot 44. In front room of temple, north of main section (Str. SE….-1st A, room 2)'. The contents of this lot are pottery censer fragments and partially reconstructable vessels. Evaluation: Tepeu; including definite Eznab.

Lot: 96, is described as "PD. 193. Sherds from front room of AUROCHS str., left around until end. Possibly from PD 193 but also would include sherds from collapsed fill of room. Contents: sherds. Evaluation: Classic; including probable Tzakol.

Assigned period: Terminal Classic

Chronological basis: Stratigraphy and ceramics. An evaluation of the materials from lots 44 and 88 made by Fry in 1974 reported all the assessed materials coming from these lots to belong to the Eznab Complex. The assessment was based on 15 rim and diagnostic body sherds. The latter are reported to have included ovenshape tripod plates, chilli grinders (*molcajetes*), high groove at lip of red bowls, and bulge neck jars. Also represented were some polychrome vases of simple colours, mainly dichromes, and simple geometric type designs. The vessel forms mentioned are reported to have included 'three cylindrical vases, two outflaring walled tripod plates, one shallow dish, one chilli grinder (*molcajete*), five large red bowls and three narrow mouth slipped jars' (Fry 1974, Problematical Deposit cards).

References: Tikal Lot cards and Problematical Deposit cards

(S) Censer material: Part of an effigy headdress from a seated-effigy cover (recorded by Ferree as 135A-560/24 [-328] but 135A/44 and 3, 135A-661/88 PD 193, 135A-662/27, and 135A-662/95 PD. 202 as written on the headdress's fragments, Figure 27a), a hollow cylindrical stand with an effigy representation (135A-711/95 and 135A-595/27, Figure 27b), and the fragment of a seated-effigy cover (12A-651/95 and 135A-321/19, Figure 27c)

Site: Uolantun

Project name: Tikal Project

Structure designation: SE-486

Structure location: Uolantun, south west area

Structure's occupational period: Construction date (?) till Terminal Classic period

Description of construction phase: High, terraced structure, 23 m long, 20 m wide, and 10 m high with a vaulted masonry building of two tandem rooms on top.

Context identification: 135A/95

Operation: 135 Peripheral investigations, Uolantun

Suboperation: A, Structure SE-486

Lot: PD. 204, described as a 'deposit of incensarios and carbon intruded into floor of AUROCHS structure between door jambs going into back room. Patch was laid over the deposit. The floor into which the deposit was intruded was burned. This lot guaranteed pure' (Puleston, D., lot card information). The contents recorded in the lot were censer fragments, sherds, and a carbon sample. Censer cross lot fits were identified as: /16, 18, 19, 24, 25, 27, 39, 40, 44, 49, 67, 95, 88, 135B/2, 135C/4.

Assigned period: Possibly Terminal Classic

Chronological basis: The chronology of materials from lot 95 is based on the chronology of cross lot fits, especially of lots 44 and 88.

References: Tikal Lot cards and Tikal excavation operations (Philadelphia file 11/66)

(T) Censer material: Container with high outflared walls and triangular perforations (A-312, Figure 28a) and a vessel with high walls and an everted rim (A-313, Figure 28b)

Site: Ixtonton

Project name: Atlas Arqueológico de Guatemala

Structure designation: Structure 3

Structure's location: Ixtonton 2, Plaza A

Structure's occupational period/s: Late Classic, Terminal Classic and possibly Postclassic period

Description of relevant construction phase: High, terraced structure composed of four terraces and a central stairway leading to a central building. Structure with two lateral shrines (*templetes*).

Context identification: 5-200-52

Operation: 5, Ixtonton

Suboperation: 200, Ixtonton 2 (Acrópolis), Plaza A, Structure 3 (south), uppermost construction phase

Lot: 52, *Escondite* 18. The cache was placed at the foot of the Late Classic stairway of the building when it was covered during the following Terminal Classic construction phase.

Chronology: Terminal Classic

Chronological basis: The substructure contained ceramic materials dated to the Late Classic period. The collapsed exterior materials were associated with the Terminal Classic and possibly to an occupation during the Postclassic period.

References: (Juan Pedro Laporte, personal communication, 2006)

(U) Censer material: A ladle censer (lot 568, Figure 29)

Site: La Joyanca

Project name: Proyecto Petén-Noroccidente La Joyanca

Structure's designation: 6E-12

Structure's location: Southwest of the Main Plaza

Structure's occupational period: Late Classic/Terminal Classic

Description of relevant construction phase: 6E-12 was a high, terraced platform with a vaulted building on top composed of one interior room with a central doorway. The substructure comprised four high and two lower terraces. The total height of the substructure was 11.20 m. The lower terrace was 30.60 m long and 19.60 m wide. A frontal outset stairway faced the plaza. The walls of the building were covered by cast stones with some modelled stucco decoration. The construction phase of the structure was dated to the Late Classic period based on the form of the cast stones and the presence of polychrome ceramics associated with debris of the building. Fine paste ceramic sherds suggested that the building continued to be used during the Terminal Classic period.

Context identification: Op. 121, lot 568

Operation: 121, excavations and consolidation of structure 6E-12

Lot: 568, was assigned to a concentration of censer fragments near a cylindrical stone with carved glyphs (23 cm in diameter and 17 cm high) in the axis of the doorway and near the back wall of the room on Floor 1. The cylindrical stone of grey limestone (SE n. 1) was burnt as well as the stucco floor and the back wall of this sector. Small charcoal and bone fragments were found in addition to the censer sherds. Another carved cylindrical stone (SE n. 2) without glyphs was found 1.40 m north of the south wall and 1.10 m to the east wall.

Assigned period: Terminal Classic

Chronological basis: Architecture and ceramics. A Terminal Classic date is suggested based on the presence of Terminal Classic ceramic materials including Fine ware ceramic sherds that would have accounted for the latest occupation of the structure.

References: Arnauld and Saint-Dizier 2001: 12-36

(V) Censer material: Ladle handles (I 494 and I 496, not illustrated)

Site: Machaquila

Project name: Atlas Arqueológico de Guatemala

Structure designation: Four-lobed enclosure (*recinto cuadrilobulado*)

Structure location: Plaza A

Structure occupation period: Terminal Classic (and perhaps Late Classic)

Description of construction phase: Four-lobed enclosure that consists of a course of cut stones possibly constructed during the beginning of the Terminal Classic period. A large amount of cultural material was found in it. Evidence of more than one construction phase has not been identified. No levels or lower sealed floors have been identified and the enclosure appears to have been an open space. A total of 501 fragments of incense burner materials are reported to have been recovered from this enclosure, most of which were fragmented, eroded and of a small size. Of these, 20 fragments were selected as a sample which included a fragment identified as part of a vessel, cylinder flanges, fragments of cylinder bodies, effigy fragments, appliqué representations as well as four ladle handles (two of which are addressed here given their clear diagnostic characteristics). Other ceramic materials recovered were identified as bowls with restricted openings and handles (*ollas*), plates, vases, bowls, clay dishes used to bake tortillas (*comales)*, and chilli grinders (*tecomates*) as well as ceramic boxes, musical instruments, and flint and obsidian instruments. Some human bones were also found.

Assigned period: Late Classic/Terminal Classic, but more likely Terminal Classic

Chronological basis: 99.87% of the ceramics recovered were assigned to the Late Classic/Terminal Classic periods. Diagnostic ceramics belonging exclusively to the Late Classic (Siltok Complex) or the Terminal Classic (Ixmabuy Complex) were not found. The identified ceramic types were present in both complexes. A more likely Terminal Classic date (A.D. 800-850 or A.D. 830-880) is suggested mostly based on a comparison of the percentage of the Tinaja Red: Subin ceramic type recovered from the excavation units of the enclosure with the percentages suggested in the Petexbatun area during the Terminal Classic Sephens Complex. Also indicative was the manufacturing technique of some of its facing stones (veneer masonry) suggested to have started to be used in the Peten during Terminal Classic times.

References: Lacadena 2006

12.4.3. Late Classic and/or Terminal Classic Periods

W) Censer material: Censer fragments from lots 1165 (Figure 30a), 1188 (Figure 30b) and 1195 (Figure 30c) from a hollow cylindrical stand with flanges and an effigy representation. A hollow cylindrical stand with a standing human effigy representation (Figure 31a) and censer fragments (Figure 31b and c) from what appears to be another hollow cylindrical stand from lots 1142 and 1165, an effigy censer with flanges (Figure 32a) and various censer fragments from lot 1142, an effigy fragment from lot 1168 (Figure 32b), and the fragment of an effigy vessel with base (Figure 32c)

Site: La Joyanca

Project name: Proyecto Petén-Noroccidente La Joyanca

Structure's designation: 6E-6

Structure's location: Southeast side of the Main Plaza

Structure's occupational period/s: Late Classic and Terminal Classic

Description of relevant construction phase: High, terraced platform with a vaulted building on top composed of one interior room. The substructure consisted of three terraced platforms and was 10.20 m high with its base measuring 26.10 m long and 17.40 m wide. It had a central stairway in its west slope facing the plaza. The construction of the building is dated to the Late Classic period (A.D. 600-700) and its occupation to around A.D. 950 during the Terminal Classic period.

Context identification: Op. 122, lots 1165, 1168, 1142, 1195

Operation: 122

Lot: 1165, 1168 and 1142, were located in the interior of the room on Floor 1 and in a recess in the back wall in front of the room's entrance. The materials from these lots were ceramic fragments of incense burners, flint fragments, and small and burnt limestones. The materials were mixed with gravel and large stones from the arch as well as gravel from the room's collapse. The floor was burnt.

Chronology: Terminal Classic (Tuspan complex)

Lot: 1195, deposit at the base of the structure's stairway below collapse. The deposit was composed of censer fragments, fragments of shell and flint as well as obsidian blades.

Chronology: Late Classic or Terminal Classic

Chronological basis: Stratigraphy and ceramic materials. A Late Classic or Terminal Classic date is suggested on the basis of the Structure's construction date during the Late Classic period. Its suggested occupation is around A.D. 950. These dates are suggested based on a preliminary analysis of the recovered material dated to the Late Classic (Abril 2 Complex) and some ceramic fragments that seem to correspond to the Terminal Classic period (Tuspan Complex). The occupation dates of structure 6E-6, as well as the contiguous structures 6E-4 and 5 are based on the presence of polychrome plates, Saxche/Palmar bowls, Tinaja Red jars, as well as Fine Orange and Fine Gray bowls.

References: Ponciano 2001: 37-62; Ponciano 2002: 42-53

X) Censer material: A hollow cylindrical stand with flanges and what is likely a Jaguar/Sun representation (3A-88/6, 9, Figure 33a), a hollow cylindrical stand with flanges and an effigy representation (3B-37b/5 and 3A-97/6, Figure 33b), and a fragment of a censer effigy mask (3B-37a/5, Figure 33c)

Site: Tikal

Project name: Tikal Project

Structure designation: 7F-30

Structure location: Group 7F-1

Structure's occupational period: Late Classic and Terminal Classic

Description of construction phase: High, terraced platform approximately 5.92 m high above Floor 1 with a stairway on its west side and a vaulted masonry building on top.

Context identification number: 3A/6, 9 and 3B/2, 5

Operation: 3, excavations in Group 7F-1, associated with Stela 23

Suboperation: A, excavations of Stela 23 and broadly defined contexts

Suboperation: B, excavations of structure 7F-30

Available contextual information: The censer material was recovered from the hearting of a frontal platform overlying the basal step of the stairway of structure 7F-30. Underlying the platform there was a tomb (Burial 1) that had been cut through Floor 1 before the platform was built.

Assigned period: End of Late Classic/Terminal Classic

Chronological basis: The censers are considered by Coe and Broman (1958) to be contemporaneous with the construction of the platform which is dated to the Late Classic period and possibly the very end of this period on the basis of the ceramics recovered on the surface, fill, and Burial 1 as well as on stratigraphy. The ceramics from Burial 1 consisted of a large incurving red ware bowl with a flat base and a flat lip similar to others in Uaxactun dated to Tepeu 3, and a flat base polychrome bowl red-orange-and black-on-cream dated to Tepeu 2. Surface materials included censer sherds and the fragment of a ladle censer as well as carved Fine Orange sherds suggesting a date for the use of the platform during Terminal Classic times. No Postclassic evidence was identified in the group.

References: Coe and Broman 1958

12.4.4. Terminal Classic or Postclassic Period

Y) Censer material: Four containers with outflared walls, a censer fragment whose representation was identified as an individual with a bat headdress and a pectoral with a bat face, the fragment of a possible lid representing an old individual wearing a necklace, and a dog figurine. All materials were catalogued as Element 2712 (Figures 34-36).

Site: La Joyanca

Project name: Proyecto Petén-Noroccidente La Joyanca

Structure's designation: 6E-1

Structure's location: North of the Main Plaza

Structure's occupational period/s: Preclassic to Terminal Classic, with suggested Postclassic activity

Description of relevant construction phase: 6E-1 is composed of a substructure of two terraces and a building resting on top of them. The building did not have access to the south, facing the plaza, but to the north. A stairway linked the building with a terrace extension that had two small mounds of unknown function. The lower terrace of the substructure had an east-west extension of approximately 20.67 m and an extension to the north of at least 27.20 m. The terraces were 1.70 m high. The building measured 8.54 by 14 m and was 2.30 m high. It was raised on a third smaller and lower terrace that lay on top of the substructure. Two small quadrangular structures of unknown function, measuring 2 by 2 m each with 50 cm high walls and separated by a distance of 2.70 m were located in the west and east part of the building. The structures were united by a wall with a niche where *in situ* censers were found. The building did not appear to have been vaulted. The construction of the structure, of unknown function, is suggested to have occurred during the Late Classic or Terminal Classic period and its occupation is dated to the Terminal Classic period as suggested by the presence of Terminal Classic materials in the superstructure and on the platform's floors to the north, south and west of the Plaza.

Context identification: Op. 123, lot 2712

Operation: 123

Unit D: Trench 20, located along the mound's central axis. It consisted of materials from the last construction phase of the building.

Lot: 2172, layer 1 was composed of very dark greyish brown and not very compact humus. The layer was composed of some pottery, flint flakes and obsidian, a figurine and charcoal. Within the layer but not directly on the stucco floor, a deposit of incense burners and other materials named Element 2712 were found. The element laid within an improvised niche on a wall that united two squared features (perhaps benches) and which was located on the structure's central axis oriented to the north.

Assigned period: Terminal Classic or Postclassic

Chronological basis: Element 2712 was assigned a late date on the basis of the peculiarity of the censer fragments representing the two individuals and its late stratigraphic context. The original floor of the latest structure on which the materials were found was covered with debris suggesting that the structure might have already started to collapse. Element 2712 lied on a 10 cm layer of sediment covering the floor of the structure (Melanie Forné 2006, personal communication). This, and the presence of Terminal Classic materials in the superstructure as well as on the terrace's floors to the north, south and west of the plaza suggests a Terminal Classic or Postclassic date to the censer material.

References: Arnauld and Arredondo 2002: 54-75

12.4.5. Postclassic Period

Z) Censer material: Ladle censer A-324 (Figure 37a) and censer fragments (Figure 37b)

Site: Ucanal

Project name: Atlas Arqueológico de Guatemala

Structure designation: Structure D3

Structure location: East side in Group D, located in the south end of the site, on the top of a hill

Structure occupational period: Preclassic, Late Classic, Terminal Classic and Postclassic

Description of relevant construction phase: High, terraced structure with a flat surface on top. The structure corresponds to a fourth construction phase in which a temple like building composed of two rooms possibly constructed during the Terminal Classic period was covered. The structure's dimensions were 18.90 m long (north-south), 20 m wide (east-west), and 9 m high. Five terraced platforms were identified as part of the substructure which had an outset stairway. The construction and occupation of the structure are dated to the Postclassic period.

Context identification: 86-75-1

Operation: 86, Ucanal

Suboperation: 75, structure D3, superstructure, excavation towards the interior of Room 2

Lot: 1, *Escondite* 70. The cache was located in the fill of Rooms 1 and 2 and consisted of a ladle censer.

Assigned period: Postclassic

Chronological basis: Ceramics and stratigraphy

References: Corzo *et al*. 1997: 79-124; Laporte and Mejía 2002: 14-15

12.5. SECTION E

12.5.1. The application of chemical analysis to residues recovered from Mayan incense burners and associated contexts

By Brendan Derham and María Dolores Tobías

The application of organic residue analysis to artefacts can provide direct evidence of the deliberate exploitation and use of natural resources and enrich the artefact's archaeological interpretation. The range of this approach is increasing, driven by advances in analytical techniques that permit the analysis of an ever-wider suite of compounds. This project focused modern instrumental techniques of organic chemical analysis such as Elemental analysis of carbon, hydrogen and nitrogen (CHN), Gas chromatography (GC) and Gas chromatography-mass spectrometry (GC-MS) to residues associated with incense, incense burners and votive artefacts. The aim is to establish the survival potential as well as variability in the use of incense across a range of Mayan archaeological sites and to compare the results with modern reference material from local markets used by indigenous peoples.

Carbon, hydrogen and nitrogen (CHN) elemental analysis

Elemental determinations of the percentage of carbon, hydrogen and nitrogen (CHN) in small amounts of the intact crude samples were performed on a Carlo Erba 1108 elemental analyser with CE Eagerv200 software in the Centre for Advanced Chemical and Materials Analysis at Newcastle University.

The CHN analysis involves the combustion of weighed sample (approx. 1mg) in a reactor at 1050^{o}C. Helium transports the combustion gases into the catalytic section where they were oxidised to CO_2, H_2O and N_2 and N_xO_y. The nitrous oxides are then reduced to nitrogen. The gases are then separated on a chromatography column and quantified using a thermal conductivity detector.

The results of CHN analysis (see Table 1), provide an indication of the percentage of organic material present in the sample. This makes it possible to distinguish those samples containing significant quantities of organic material and are therefore of relevance to the study from those that are essentially all mineral or ceramic and are therefore not suitable for organic residue analysis.

Sample extraction

In order to undertake effective analysis of the organic residues they first need to be separated from any mineral or ceramic matrix in which they are enmeshed. Samples were extracted into 5 ml of (dichloromethane: methanol, 3:1) or chloroform if necessary, in an ultra-sonic bath (Sonicor SC-101-22, 60 Hz 0.5 amps) for 15 min. The tubes were then transferred to a centrifuge and spun at 3,000 rpm for 10 min. The supernatant was then decanted into a pre-cleaned scintillation vial. The extraction step was then repeated twice with fresh solvent, and the extracts combined and blown to dryness under a nitrogen stream in a pre-weighed vial. The nitrogen stream was filtered through a glass wool wad. The dry residues were stored at –20^{o}C to minimise any further sample decay. Analysis was performed on aliquots removed from the vials.

Gas chromatography (GC)

Gas chromatography is a separation technique in which samples individual components are resolved by partition between two phases, a stationary liquid phase lining a capillary tube and a mobile gaseous phase flowing through it. The volatility of an individual component determines the rate at which it moves through the column, and this is defined as its retention time (R_t).

Gas chromatographic separation of organic compounds is limited by the vapour pressure and thermal stability of the compounds in question. The presence of free labile hydrogen functional groups in many natural products such as terpenoids, fatty acids and alkaloids can have a detrimental effect upon the results. The samples are therefore derivatised prior to analysis. The effect of this is to reduce the polarity of the molecule and hence the hydrogen bonding, which increases the vapour pressure and reduces peak tailing.

Analyses were performed using a Hewlett Packard 5890 series II with a split-splitless injector, used in splitless mode and flame ionisation detector. Data processing was carried out with Hewlett Packard Atlas software. The analytical column used was a polyimide-clad fused silica capillary column (15 m x 0.22 mm i.d.), coated with DB-1HT 0.1 µm stationary phase (dimethyl polysiloxane). The carrier gas was helium at a flow rate of 1ml min^{-1} and a column head pressure of 25 psi. The GC programme consisted of a 3-minute isothermal hold at 40^{o}C and then a rise of 40^{o}C to 250^{o}C at 8^{o}C min^{-1} followed by a rise from 250 to 380^{o}C at 5^{o}C min-1 and an isothermal hold at 380^{o}C. The final temperature was held for 7.75 min. giving a total run time of 60 mins.

The results appear as graphs of 'Response' (reflects the amount of a particular compound) versus the 'Retention time' (the time the individual component takes to travel down the column and reach the detector, i.e. the compounds volatility). The plot represents the composition of complex mixtures separated into their individual components. The identification of the individual components, however, can only be based upon comparison of the retention times with those of known reference standards. The identification of individual compounds, however, may be achieved by combining the technique with mass spectrometry in a technique termed Gas chromatography-Mass spectrometry.

Gas chromatography-mass spectrometry (GC-MS)

Gas chromatography serves as an analytical technique in separating a sample into its individual constituents. In contrast, Mass spectrometry is based upon ionising individual molecules and then plotting the fragmentation pattern as it breaks up. In this particular study electrons are used to bombard individual sample component, removing an electron and producing a molecular ion (MI$^{\cdot}$). Further fragmentation of the molecular ion will then occur producing a series of peaks at smaller *m/z* values including a particularly large peak termed the Base Peak (BP). The form and pattern of the disintegration especially the MI and BP ions can then be used to identify the chemical structure of the molecule in question.

The results are plotted as with gas chromatography in terms of 'ion intensity' versus 'retention time'. The individual peaks, however, may then be plotted as mass spectra to provide a plot of the individual compound as 'ion abundance' versus '*m/z* value'.

The correlation of the molecular fragmentation patterns with the established characteristic fragmentation pattern of a standard, in most cases allows identification with a degree of certainty. Details of individual characteristic features such as the retention times (R_t), molecular ions (MI), base peak (BP) and characteristic fragmentation ions (*m/z* ratio and percentage base peak height) are presented in Appendix A.

Analyses were performed using a Hewlett Packard 5890 series II GC with a split-splitless injector, used in splitless mode. The analytical column used was a polyimide-clad fused silica capillary column (30 m x 0.22 mm i.d.), coated with DB-5 HT 0.1 µm stationary phase (dimethyl polysiloxane, OV-5 equivalent, SGE, UK). The carrier gas was helium at a flow rate of 1ml min^{-1} and a column head pressure of 25 psi. The GC programme consisted of a 3-minute isothermal hold at 40°C and then a rise of 40°C to 250°C at 8°C min^{-1} followed by a rise from 250 to 380°C at 5°C min-1 and an isothermal hold at 380°C. The final temperature was held for 7.75 min. giving a total run time of 60 mins. Mass spectral analysis was with a HP5972A mass selective detector. Ion abundance was plotted over the *m/z* ratio range 50-700. Data was stored and processed using HP G17701AA Chemstation software. The transfer line was set to 340°C. Mass spectra were acquired by (70eV) electron impact ionisation.

Samples and Results

The Table 1 shows the sample details and description as well as the percentage of sample that is organic (%CHN) as well as whether Gas chromatography and Gas Chromatography Mass Spectrometry were performed on the sample.

Discussion

The %CHN results show that 4 samples (S3, S5 and C5, C6) are predominately inorganic or mineral based. Little more can be said about these samples as they require appropriate analyses for minerals and salts etc. The rest of the samples are organic and are readily analysed by GC and GC-MS. The level of nitrogen in all of the samples is very low suggesting that the samples contain neither alkaloids nor proteinaceous matter in significant quantities.

As can be seen from the GC plots (**Figures 1** and **2**) most of the archaeological samples consist of peaks within the 29-32 minutes range. Even sample 14 that was thought to be part of an ancient beehive is composed predominantly of these compounds. In contrast, the vast majority of compound peaks for the modern reference samples all appear between 20-25 minutes or even earlier (**Figures 3**, **4** and **5**). The majority of reference resins therefore appear to consist of smaller molecules than the archaeological samples. The 2 reference samples that are most similar to the archaeological ones are A7 Copal Blanco, Hojas de Guineo, POM and B6 Incienso lágrima/puro. It can be concluded from these results that most of the archaeological samples are of a similar composition to each other and most closely resemble reference samples A7 and B6.

There are 5 exceptions to this generalisation. Samples S3 and S5, identified as blanks by elemental CHN analysis, also appear to be blank by GC analysis and must consist therefore of mainly mineral or ceramic material. Samples S7 and S12 are predominantly organic in composition according to CHN analysis, 47% and 68% respectively, and yet show GC plots that are essentially blank. Sample S7 upon visual inspection consists of charcoal and therefore whilst being organic in nature contains no volatile components that GC analysis could detect. Sample 12 is described as a 'black copal ball' and whilst it is possible that this is also charcoal it may possibly consist of a fragment of a ball of 'rubber' which as a polymer would not contain compounds suitable for this form of GC analysis. Sample 15 was the only one of the 5 anomalous samples, based on the GC analyses that provided a potentially meaningful result.

The Gas chromatography-Mass spectrometry analysis of the two reference samples A7 and B6 demonstrate that they both consist of a class of compounds termed pentacyclic trterpenes found in plant resins. The two resins however, can be distinguished from each other as they contain distinctive compounds or 'biomarkers'. Sample A7 is based on amyrin and amyrenone as well as related compounds such as manilidiol and breine. In contrast sample B6 consists of boswellic acid derivatives. Only a limited number of the archaeological samples were analysed by GC-MS ie. samples S4, S8, S10 and S15-20 and all of these consist of the amyrin and amyrenone compounds present in reference sample A7 or Copal Blanco, Hojas de Guineo, POM. Samples S3 and S5 were also analysed by GC-MS to ensure that the blank diagnosis was appropriate.

Sample 15 was the only sample with anomalous composition of those analysed by GC-MS. The sample consists of various furans and pyrenes that are difficult to distinguish. These compounds are only really encountered as the products of the combustion of organic plant or animal matter. There is nothing to indicate what it was before it was burned.

Conclusion

It can be concluded from these preliminary results that the material used as incense by the Maya is the same as that which is sold in the modern markets as 'Pom'. The question remains as to the precise botanical source of Pom although it is currently thought that it is the resinous exudates from trees of the Protium family (Stacey *et al.* 2006).

Table 1 Sample details

	Location	Description	Figure	ID	%CHN	GC	GC-MS
S1	Tikal. Tikal Project. Operation 12: North Acropolis, North Terrace, North Stairway. Suboperation R: Structure 5D-22 A, small area located in the fill of sally, within the first three stairs of this structure, and on the new structure Karen. Lot 2: Fill of structure built on Floor 4a and abutted by Floor 3. PD. 77A. The deposit is composed of a carbon sample, obsidian (grey, slightly curved and fragments), unmodified shell, unmodified bone (probably a small animal and a human phalanx, as well as long bone fragments), mica fragments, jade (burned fragments), flint (unmodified (?) flakes), a pottery censer, loop handled cover fragments, and copal.	label information: 'unidentified sample of copal'	not photo-graphed	label information: '12 R-247/2'	29.74	yes	
S2	Provenience not available. Specimen stored in the Bodega of Tikal	resin lumps from inside a small pedestal-based censer with an effigy head (resin lumps not adhered to the vessel walls and not burned)	not shown	censer ID: 17.1.1.1047	~100	yes	
S3	Tikal. Tikal Project. Operation 98: Excavation of Structures 5D-45, 46 in Group 5D-XI or Central Acropolis, in its east extreme. Suboperation B: Excavation in the central axis of Structure 5D-46 in its west side. Lot 12: Cache 197. Contents: Mosaic figurine fragments, shell figurines, eccentric flints, and a cache pot. Artifacts associated with Vessel 2 in Cache 197: 'sacred earth' consisting mainly of tiny fragments of spondylus shell and jade. Organic dust.	label information: 'organic material from inside Vessel 2, also jade, marine material, and bitumen (…)'	not photo-graphed	label information: 'Vessel 2 Cache 197 98B/12'	9.19	yes	yes
S4	Tikal. Tikal Project. Operation 4: Cleaning and excavations in Temple I (Structure 5D-I). Suboperation C: Post-structures alterations and intrusive pits within the temple. Lot 1: Beneath floor of rear room level of Temple I. Ancient tomb disturbed. Ancient cut below temple level and probably at 9th building stage of temple substructure.	label information: 'copal?'	not photo-graphed	label information: '5D-1 op. 4-C lot 1 (M)'	50.94	yes	yes
S5	Tikal. Tikal Project. Operation 12: North Acropolis, North Terrace, North Stairway. Suboperation K: Axial Tunnel, Structure 5D-33, substructure. Lot 22: Structure 5D-33. Tomb of Burial 48. Tomb at cut into bedrock below N. Terrace level at centre base of Early Classic stairway to North Acropolis. Tomb walls painted with black hieroglyphs including I. S. date 9.1.1.10.10. 4 oc. 18 Kayab (457 AD). Contents placed and tomb sealed, entrance filled, 12K, lot 21, and Early Classic temple 5D-33 built over tomb. Contents: pottery vessels, stingray spines, marine shells and material, jade beads, mosaics, alabaster bowl, much organic material, etc. 12K-283 a-i – organic material to be analyzed. a, d, g, clay- 'masketters', i- pyrate plaque elements, a- cloth impressions, b- cloth.	label information: 'inorganic and organic material'	not photo-graphed	label information: 'Burial 48, # 66; 12K-283 I lot 22'	3.87	yes	yes

	Location	Description	Figure	ID	%CHN	GC	GC-MS
S6	Provenience not available. Specimen stored in the Bodega of Tikal.	resin adhered to the inner walls of a pedestal-based censer with a standing effigy representation	Figure 89	censer ID: 17.1.1.1434	30.09	yes	
S7	Tikal. Tikal Project. Operation 12: North Acropolis, North Terrace, North Stairway. Suboperation P: Extension of Pit 12G, up to bedrock, for the excavation of structures Snow and Mist, two buildings partially destroyed under structure 5D-26 sealed by Floor Wait (Operation 12G Floor C). Mist is the earliest building, and was partially destroyed when Snow was constructed. Lot 78: Burial 85, North Acropolis. Section B Line, below 'Rudy' structure (Burial intruded through functioning 'woof' floor and immediately sealed by 'Rudy'). Contents: skeleton (without head or femurs – probably bundled), pottery vessels, shells, jadeite bead and mask, 2 sitingray spines, organic material (shroud?), charcoal within and well out vessels, etc. Bowl 12 P-84 is tabbed bowl (#18). The bowl is round-sided and flat-bottomed with a small rim tab and polished red slip (10R-5/8). It was filled to brim with silt, pebbles, etc. Small human bone fragments and dark brown (organic) material was over part of silt, but superficial. A few flecks of charcoal, some snails, rodent bones present. All of this above a bowl-shaped layer of stucco painted pale green with some pink detailing. Base of stucco 'bowl' ca. 2.7 cm. below bowl rim. Many other pale green and pink stucco fragments also associated with this bowl. Some of the brown organic? material was to one side and below stucco 'bowl'.	label information: 'charcoal from Bowl 12P-84'	not photographed	label Information: 'B. 85 12P/78'	46.53	yes	
S8	Uolantun. Tikal Project. Structure SE-486. Lot 44 (PD.193), large deposit of incensarios and pots, hearth, etc. on the floor of the 1st room of the building.	label information: 'copal'	not photographed	label information: '135A-260/44'	20.80	yes	yes
S9	Tikal. Tikal Project. Operation 11: Great Plaza (Group 5D-1). Suboperation F: Trench between Temple I and the monuments in front of it (Stelas P28, P20; Altars P22, P23). Lot 2: Temple I. Test pit between stairway and stela. Between Floors C and ALE. Contents: sherds. 11F-2 – Copal.	label information: 'copal'	not photographed	label information: '11F-2 11F- Lot 2'	~100	yes	
S10	Tikal. Tikal Project. Operation 4: Cleaning and excavation of Temple I (Structure 5D-1). Suboperation A: Material from collapse on the floors of the interior of the temple.	resin adhered to pedestal-based censer	not shown	censer ID (as written on object): 4A-23	38.54	yes	yes
S11	Tikal	modern sample of beehive obtained as part of this study in the vicinity of the Bodega of Tikal	not photographed		54.59	yes	
S12	Tikal. Tikal Project. Provenience not available. Unlabeled material stored as organic samples in the Bodega of Tikal.	black ball	Figure 111		67.69	yes	
S13	Idem S3	label information: 'organic material from inside vessel 2, also jade, marine material, and bitumen (…)'	not photographed	label information: 'Vessel 2 Cache 197 98B/12'	62.25	yes	

	Location	Description	Figure	ID	%CHN	GC	GC-MS
S14	Tikal. Tikal Project. Unlabeled material stored as organic samples in the Bodega of Tikal.	yellowish resinous sample (originally thought to have possibly been part of an ancient beehive based on shape and structure of the material)	Figure 111	no label information	61.60	yes	
S15	Calzada Mopan, Proyecto Atlas Arqueológico de Guatemala. Context identification number: 37-554-1. Centro Ritual Público, North Structure, surface.	burned residue on possible censer sherd with incised lines	Figure 69a	sherd ID: PSPI 437	55.48	yes	yes
S16	Yaxhá. Proyecto Yaxhá-Nakum-Naranjo. Operation I: Structure 216-1 located on the East side of the Acropolis. Suboperation 7. Lots 4-7: PD. 1: located in the rear chamber of the last building. The deposit is a concentration of fragmented ceramic material and copal within a matrix of brown earth lying on the floor and the fallen '*pasadores*'. It is associated with a rustic wall that sealed at least the lower section of the opening space between the chambers. The deposit included two resin figures. Assigned period: Middle Postclassic	sample from black ball inside resin figure	Figure 116b		71.67	yes	yes
S17	Yaxhá (Idem S16)	sample from the yellowish resin that covered specimen with *pom* motif on its base (the figure also contained a black ball inside)	Figure 116a		37.06	yes	yes
S18	Yaxhá (Idem S16)	sample of yellowish resin	Figure 116b		47.01	yes	yes
S19	Topoxte. Main Plaza. Structure E-2. Context Identification number: III-15 and 17-2. Lot 2: Ofrenda 19. The offering was found on the last floor of the room's interior and occupied all the area near the south wall and around the column of the room. It consisted of numerous censer fragments with pedestal supports of which several were reconstructed. Also identified were numerous ceramic fragments of the type Patojo Modelado that were not part of any vessel but isolated fragments. A green stone was also reported. Assigned period: Middle Postclassic (Isla complex)	resin within pedestal based censer catalogued as TPMC-073	Figure 86b	censer ID: TPMC-073	42.05	yes	yes
S20	Topoxte (Idem S19)	resin within pedestal-based censer with human standing effigy catalogued as TPMC-079	Figure 90	TPMC-079	41.96	yes	yes
A1	Market of Santa Elena, Peten, Guatemala	powdered plant biomass	Figure 101b	mirra	50.23	yes	
A2	Market of Santa Elena, Peten, Guatemala	small amorphous lumps	Figure 100a	incienso en grano	45.40	yes	
A3	Market of Santa Elena, Peten, Guatemala	powdered plant biomass in lumps	Figure 101a	mirra	43.20	yes	
A4	Market of Santa Elena, Peten, Guatemala	round balls	Figure 100b	copal bolita negro	55.62	yes	
A5	Market of Santa Elena, Peten, Guatemala	shallow dish shaped resin lump	Figure 100f	unidentified sample	56.78	yes	

	Location	Description	Figure	ID	%CHN	GC	GC-MS
A6	Market of Santa Elena, Peten, Guatemala	shallow dish shaped resin lump	Figure 100d	cuilco	57.52	yes	
A7	Market of Santa Elena, Peten, Guatemala	huge yellowish lump in leaves	Figure 101c	copal blanco, hojas de guineo, pom	~100	yes	yes
B1	Market of La Antigua, Guatemala	rosemary leaves	Figure 102f	romero	54.42	yes	
B2	Market of La Antigua, Guatemala	powdered plant biomass	Figure 102c	estoraque	52.96	yes	
B3	Market of La Antigua, Guatemala	powdered plant biomass	Figure 102d	cascarudo	43.56	yes	
B4	Market of La Antigua, Guatemala	powdered plant biomass	Figure 102e	mirra	50.46	yes	
B5	Market of La Antigua, Guatemala	large crystalline lumps	Figure 102b	incienso cristalino	~100	yes	
B6	Market of La Antigua, Guatemala	small yellowish amorphous lumps	Figure 102a	incienso lágrima/ puro	46.90	yes	yes
B7	Market of La Antigua, Guatemala	resinous sticks	Figure 103	ocote	54.14	yes	
B8	Market of La Antigua, Guatemala	charcoal	not photographed	charcoal	~100	yes	
C1	Market of Pino Suárez, Villahermosa, Tabasco, Mexico	small amorphous lumps	Figure 104a	esencio (del ambar)	46.05	yes	
C2	Market of Pino Suárez, Villahermosa, Tabasco, Mexico	large yellow crystalline lumps	Figure 104d	copal blanco	~100	yes	
C3	Market of Pino Suárez, Villahermosa, Tabasco, Mexico	yellow crystalline powder	Figure 104b	mirra	~100	yes	
C4	Market of Pino Suárez, Villahermosa, Tabasco, Mexico	small amorphous lumps	Figure 104c	estroraque	57.47	yes	
C5	Market of Pino Suárez, Villahermosa, Tabasco, Mexico	large translucent crystalline lump	Figure 104e	piedra lumbre, se usa con incienso para despojar	9.70	yes	
C6	Market of Pino Suárez, Villahermosa, Tabasco, Mexico	pink powder	not shown	almisole	14.91	yes	
D	Market of Santa Elena, Peten	small shallow dish shaped resin lumps in leaf	Figure 100e	ensarte	50.45	yes	
E	Tikal			modern beewax	~100	yes	

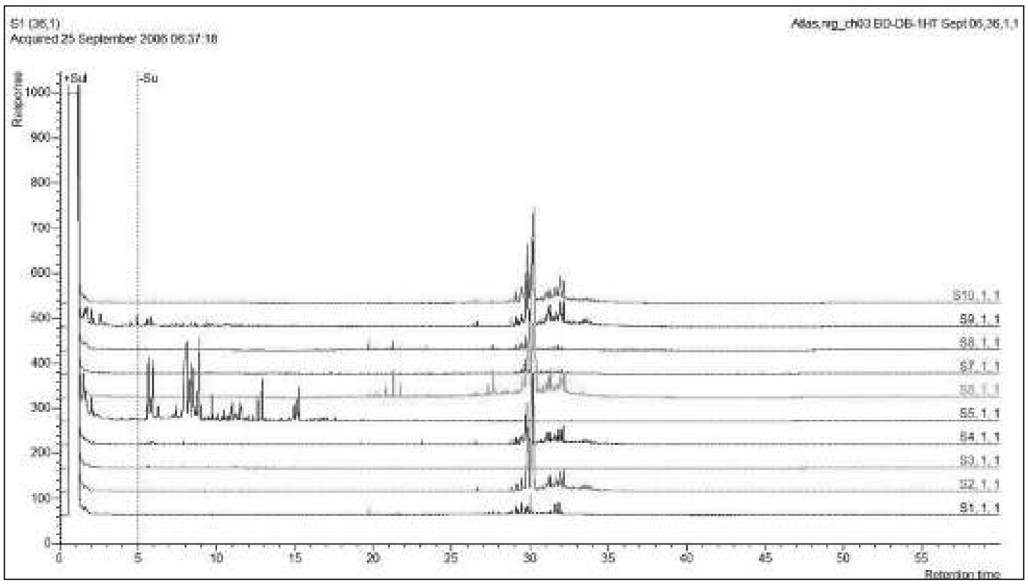


Figure 1 GC results samples 1-10

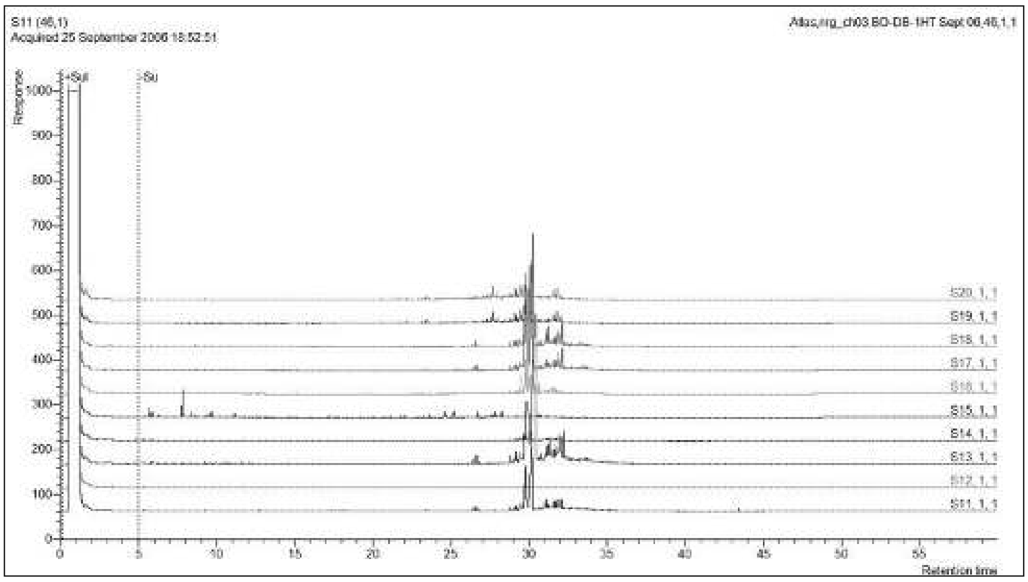
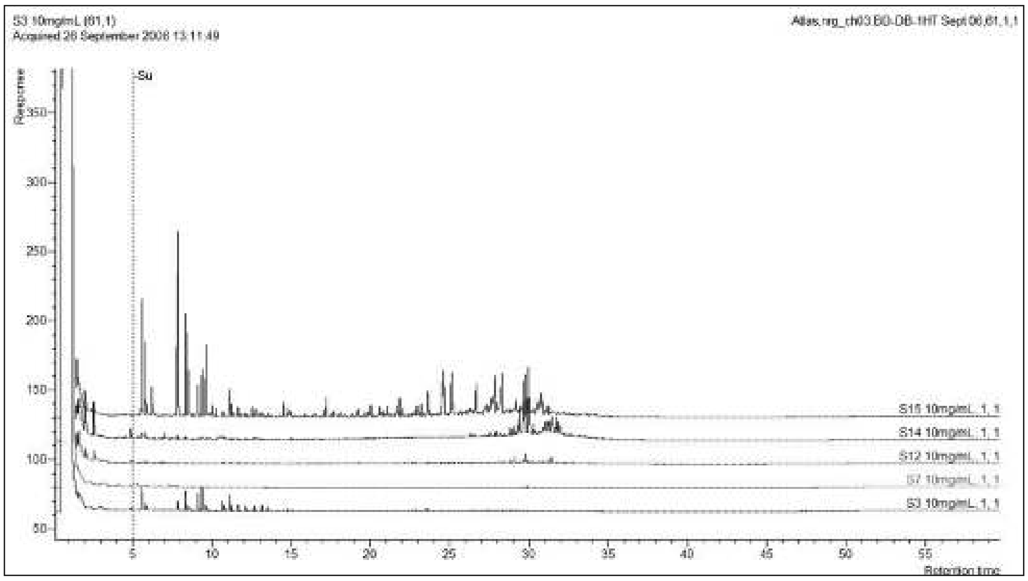


Figure 2 GC results samples 11-20



Very weak samples; S3, 7, 12, 14, 15

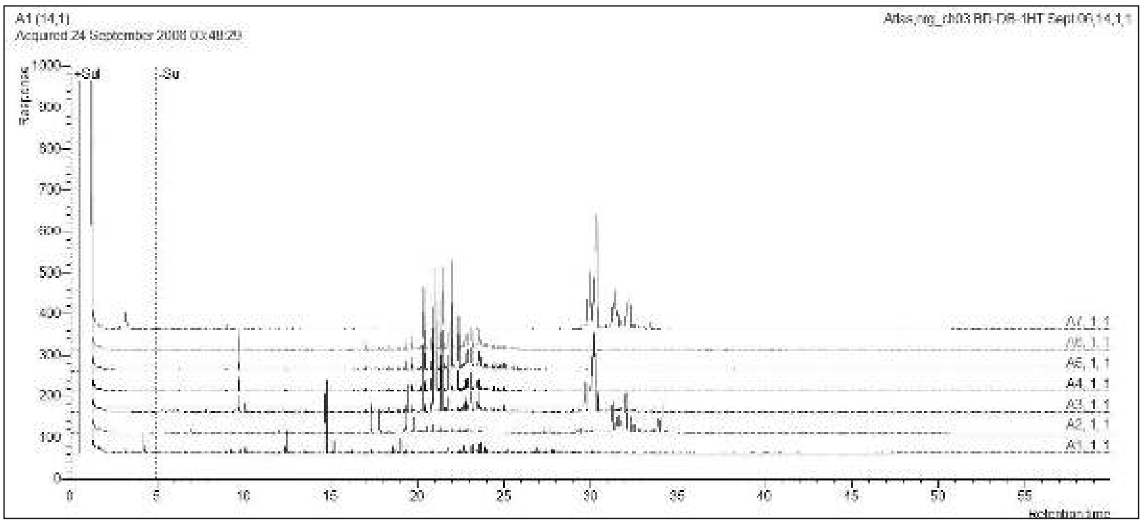


Figure 3 GC results samples A1-A7

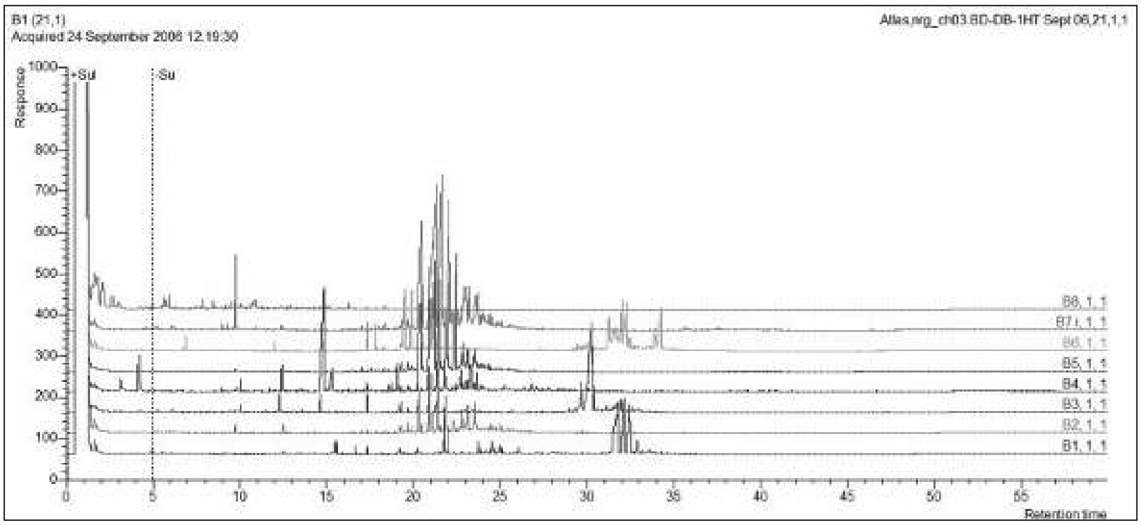


Figure 4 GC results samples B1-B8

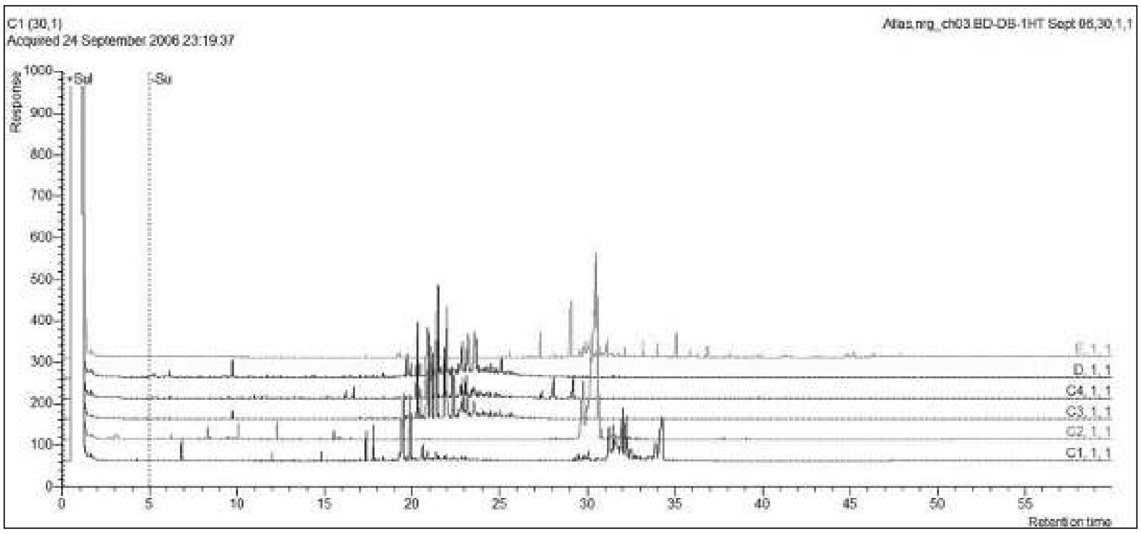


Figure 5 GC results samples C1-C4, D, E

Table 2 Modern sample of ‘copal blanco, hojas de guineo, Pom’, Market of Santa Elena, Figure 101c

A7								
Peak No.	**Retention time /min**	**Peak height**	**corr. area**	**corr. % max.**	**% of total**	**MI**	**BP**	**Compound**
1	7.7	92657	257854	5%	2%	136	93	β-pinene
2	8.1	531889	1284832	23%	11%	136	93	α-pinene
3	36.3	49635	166235	3%	1%	424	218	β-amyrenone
4	36.5	622289	2025422	37%	17%	426	218	β-amyrin
5	36.7	197055	721623	13%	6%	424	218	α-amyrenone
6	37.0	1592891	5484250	100%	47%	426	218	α-amyrin
7	38.1	185972	526810	10%	5%	468		
8	38.2	142311	423918	8%	4%	470	69	Maniladiol
9	39.1	161799	534247	10%	5%	470	69	Breine
10	39.6	62160	191749	4%	2%	442	234	unknown 1
					100%			

Table 3 Modern sample of ‘incienso lágrima/puro’, Market of La Antigua, Figure 102a

B6								
Peak No.	**Retention time /min**	**Peak height**	**corr. area**	**corr. % max.**	**% of total**	**MI**	**BP**	**Compound**
1.0	5.8	296629	7824055	24%	3%	108	108	Methoxy-benzene
2.0	11.7	132778	3080144	9%	1%	112	56	
3.0	23.1	435185	9565573	29%	4%	272	133	
4.0	24.7	1282083	32804503	99%	14%			
5.0	25.0	1520135	33207810	100%	15%			
6.0	38.1	411583	11805109	36%	5%			
7.0	38.5	246472	11611113	35%	5%			
8.0	38.7	217550	5915042	18%	3%	470	218	Boswellic acid methyl ester
9.0	38.9	572073	17723296	53%	8%	512	218	3-O Acetyl boswellic acid methyl ester
10.0	39.1	546833	17567885	53%	8%	470	218	Boswellic acid methyl ester
11.0	39.3	850624	25977863	78%	11%	512	218	3-O Acetyl boswellic acid methyl ester
12.0	39.3	139531	3480267	10%	2%	512		3-O Acetyl boswellic acid methyl ester
13.0	41.4	242959	8188825	25%	4%	528	234	Lupeol derivative
14.0	41.7	933343	33004647	99%	15%	526	273	Lupeol derivative
15.0	58.8	8239	5607483	17%	2%			
					100%			

Table 4 Sample labelled as 'organic material from inside Vessel 2, also jade, marine material and bitumen', vessel 2, Cache 197, Structure 5D-46, Tikal

S4								
Peak No.	**Retention time /min**	**Peak height**	**corr. area**	**corr. % max.**	**% of total**	**MI**	**BP**	**Compound**
1	36.3	93003	303245	4%	2%	424	218	β-amyrenone
2	36.6	1071246	3350624	43%	23%	426	218	β-amyrin
3	36.8	279922	1160396	15%	8%	424	218	α-amyrenone
4	37.0	2494270	7857764	100%	54%	426	218	α-amyrin
5	38.3	92115	340055	4%	2%			
6	39.1	87745	355126	5%	2%			
7	39.4	107728	482673	6%	3%	440	234	
8	39.7	222166	738719	9%	5%	442	234	unknown 1
					100%			

Table 5 Sample labelled as 'copal?', Structure 5D-1 (Temple I), Tikal

S3								
Peak No.	**Retention time /min**	**Peak height**	**corr. area**	**corr. % max.**	**% of total**	**MI**	**BP**	**Compound**
1	5.6	328494	1279502	100%	20%			
2	5.8	157832	586707	46%	9%			
3	10.9	449997	1015814	79%	16%			
4	11.2	122423	269104	21%	4%			
5	13.1	126015	308018	24%	5%			
6	13.6	282578	601175	47%	9%			
7	14.3	458523	887774	69%	14%			
8	14.7	376438	723680	57%	11%			
9	15.9	186838	463606	36%	7%			
10	16.4	100434	246088	19%	4%			
11	17.6	56642	138400	11%	2%			
					100%			

Table 6 Sample labelled as 'inorganic and organic material', Structure 5D-33, Burial 48, Tikal

S5								
Peak No.	**Retention time /min**	**Peak height**	**corr. area**	**corr. % max.**	**% of total**	**MI**	**BP**	**Compound**
1.0	10.9	237659	5919499	71%	26%			
2.0	12.1	357097	8154989	98%	36%			
3.0	13.1	380634	8319465	100%	37%			
					100%			

Table 7 Sample labelled as ‘copal’, Structure SE-486, Uolantun

S8								
Peak No.	**Retention time /min**	**Peak height**	**corr. area**	**corr. % max.**	**% of total**	**MI**	**BP**	**Compound**
1	25.4	105927	225608	15%	6%	234	219	retene
2	26.6	48100	99959	7%	3%	312	237	
3	26.7	146335	341237	23%	9%	314	239	
4	29.0	38129	80436	5%	2%	328	253	
5	33.2	19384	50879	3%	1%	408	218	
6	33.7	65359	164241	11%	4%	408	218	
7	35.7	14086	48612	3%	1%	424	255	
8	36.2	35027	109812	7%	3%	424	155	
9	36.3	44382	131534	9%	4%	424	218	β-amyrenone
10	36.5	158744	449235	30%	12%	426	218	β-amyrin
11	36.7	120608	407371	27%	11%	424	218	α-amyrenone
12	37.0	522433	1499900	100%	41%	426	218	α-amyrin
13	39.4	22046	91386	6%	2%	440	273	
					100%			

Table 8 Sample of resin adhered to pedestal-based censer 4A-23, Structure 5D-1 (Temple I), Tikal

S10								
Peak No.	**Retention time /min**	**Peak height**	**corr. area**	**corr. % max.**	**% of total**	**MI**	**BP**	**Compound**
1	36.2	177304	541376	5%	3%	424	255	
2	36.3	222244	717825	6%	3%	424	218	β-amyrenone
3	36.6	1432250	4970465	44%	23%	426	218	β-amyrin
4	36.7	565207	1993827	17%	9%	424	218	α-amyrenone
5	37.0	3325946	11415081	100%	54%	426	218	α-amyrin
6	39.4	229795	1002692	9%	5%	440	273	
7	39.7	246295	688772	6%	3%	442	234	unknown 1
					100%			

Table 9 Sample of burned residue from censer sherd with incised lines (PSPI 437), North Structure, Centro Ritual Público, Calzada Mopan, Figure 69a

S15								
Peak No.	**Retention time /min**	**Peak height**	**corr. area**	**corr. % max.**	**% of total**	**MI**	**BP**	**Compound**
1	5.6	284269	1046637	57%	17%			furan derivative
2	10.9	468732	996333	54%	16%			furan derivative
3	11.2	138904	466191	25%	8%			furan derivative
4	13.1	921541	1834515	100%	30%			furan derivative
5	13.6	259541	501219	27%	8%			furan derivative
6	29.5	33065	89565	5%	1%	294	263	A Pyrene
7	30.6	59218	314464	17%	5%	252	252	A Pyrene
8	31.3	66327	163579	9%	3%	252	252	A Pyrene
9	33.0	71139	187836	10%	3%	318	287	A Pyrene
10	34.5	94152	285469	16%	5%	276	276	A Pyrene
11	35.2	106266	321230	18%	5%	276	276	A Pyrene
					100%			

Table 10 Sample from black ball inside resin figure, Structure 216-1, east side of Acropolis, Yaxhá, Figure 116b

S16								
Peak No.	**Retention time /min**	**Peak height**	**corr. area**	**corr. % max.**	**% of total**	**MI**	**BP**	**Compound**
1	36.3	391830	1148137	24%	15%	426	218	β-amyrin
2	36.7	953864	4793711	100%	62%	424	218	α-amyrenone
3	37.1	313224	1123150	23%	15%	426	218	α-amyrin
4	37.5	85475	257791	5%	3%	274	259	
5	37.6	79177	250542	5%	3%	412	124	stigmst-4-en-3-one
6	39.1	46658	155183	3%	2%	438	273	
					100%			

Table 11 Sample from the yellowish resin of figure with Pom motif on its base, Structure 216-1, East Acropolis, Yaxhá

S17								
Peak No.	**Retention time /min**	**Peak height**	**corr. area**	**corr. % max.**	**% of total**	**MI**	**BP**	**Compound**
1	36.5	546263	1471951	34%	24%	426	218	β-amyrin
2	36.7	87363	273634	6%	4%	424	218	α-amyrenone
3	37.0	1335793	4306763	100%	69%	426	218	α-amyrin
4	39.6	46329	168650	4%	3%	442	234	unknown 1
					100%			

Table 12 Sample of yellow resin from incense figure, Structure 216-1, East Acropolis, Yaxhá, Figure 116b

S18								
Peak No.	**Retention time /min**	**Peak height**	**corr. area**	**corr. % max.**	**% of total**	**MI**	**BP**	**Compound**
1	36.5	743692	1952891	35%	24%	426	218	β-amyrin
2	36.7	85402	331360	6%	4%	424	218	α-amyrenone
3	37.0	1944746	5570749	100%	69%	426	218	α-amyrin
4	39.6	57090	194196	3%	2%	442	234	unknown 1
					100%			

Table 13 Sample of resin adhered to pedestal-based censer TPMC-073, Structure E-2, Main Plaza, Topoxte, Figure 86b

S19								
Peak No.	**Retention time /min**	**Peak height**	**corr. area**	**corr. % max.**	**% of total**	**MI**	**BP**	**Compound**
1	33.7	131570	353293	14%	6%			
2	34.2	32713	87376	4%	1%			
3	35.7	43708	140095	6%	2%			
4	35.9	39467	103735	4%	2%			
5	36.2	92683	294179	12%	5%			
6	36.3	105644	343377	14%	6%	424	218	β-amyrenone
7	36.5	272195	836372	33%	14%	426	218	β-amyrin
8	36.7	313429	1123443	45%	18%	424	218	α-amyrenone
9	37.0	753783	2497281	100%	41%	426	218	α-amyrin
10	39.4	77749	285654	11%	5%			
11	39.6	31136	95369	4%	2%			
					100%			

Table 14 Sample of resin adhered to pedestal-based censer with human standing effigy TPMC-079, Structure E-2, Main Plaza, Topoxte, Figure 90

S20								
Peak No.	**Retention time /min**	**Peak height**	**corr. area**	**corr. % max.**	**% of total**	**MI**	**BP**	**Compound**
1	32.9	47809	150691	7%	2%			
2	33.2	57744	156879	8%	2%			
3	33.6	193603	535608	26%	7%			
4	34.2	79920	224097	11%	3%			
5	34.9	33479	99942	5%	1%			
6	35.3	40417	92492	5%	1%			
7	35.7	58861	188917	9%	2%			
8	35.9	77065	236840	12%	3%			
9	36.2	146896	486097	24%	6%			
10	36.3	164280	523312	26%	7%	424	218	β-amyrenone
11	36.5	176587	573532	28%	7%	426	218	β-amyrin
12	36.7	507094	1699476	84%	22%	424	218	α-amyrenone
13	37.0	643639	2033813	100%	26%	426	218	α-amyrin
14	39.1	67864	240962	12%	3%			
15	39.4	105383	414947	20%	5%			
16	39.6	22980	72239	4%	1%			
					100%			

13. REFERENCES

ACOSTA, J. 1975, 'Exploraciones en Palenque, 1970', *Anales del INAH, 52*, vol. IV, Epoca 7a, pp. 347-373.

ADAMS, R.E.W. 1971, The ceramics of Altar de Sacrificios. Papers of the Peabody Museum of Archaeology and Ethnology, vol. 63. Peabody Museum, Harvard University, Cambridge, Massachusetts.

ADAMS, R.E.W. 1973 a, 'Maya collapse: transformation and termination in the ceramic sequence at Altar de Sacrificios', in *The Classic Maya collapse*, T.P. Culbert, ed., University of New Mexico Press, Albuquerque, pp. 133-163.

ADAMS, R.E.W. 1973 b, 'The collapse of Maya civilization: a review of previous theories', in *The Classic Maya collapse*, T.P. Culbert, ed., University of New Mexico Press, Albuquerque, pp. 21-34.

ADAMS, R.E.W., ROBICHAUX, H.R., VALDEZ, J.R., BRETT, A.H., and MATHEWS, R. 2004, 'Transformations, periodicity, and urban development in the three rivers region', in *The Terminal Classic in the Maya lowlands: collapse, transition and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, Colorado, pp. 324-341.

ADAMS, R.E. and TRICK, A.S. 1961, *Temple I (Str. 5D-1): Post-constructional activities.* Tikal Reports, no. 7, University Museum, University of Pennsylvania, Philadelphia, pp. 116-136.

AHLFELDT, J. 2004, *On reconstructing and performing ancient Maya architecture: Structure 22, Copan, Honduras (AD 715),* Unpublished Ph.D. dissertation, Columbia University.

AIMERS, J. 2004, *Cultural change on a temporal and spatial frontier: ceramics of the Terminal Classic to Postclassic transition in the Upper Belize River Valley.* British Archaeological Reports, BAR International Series 1325, Oxford.

AIMERS, J. 2007, 'What collapse? Terminal Classic variation in the Maya lowlands', *Journal of Archaeological Research*, vol. 15, no. 4, pp. 329-377.

AIMERS, J., POWIS, T., and AWE, J. 2000, 'Preclassic round structures of the Belize Valley', *Latin American Antiquity*, vol. II, no. 1, pp. 71-86.

ALONSO, M.E. 1986, *Diccionario medieval Español : desde las Glosas Emilianenses y Silenses (s.X) hasta el siglo XV.* Universidad Pontificia: Salamanca.

ALTSCHULER, M. 1958, 'On the environmental limitations of Maya cultural development', *Southwest Journal of Anthropology*, vol. 14, no. 2, pp. 189-198.

ALVA IXTLILXOCHITL, F. 1975-1977, *Obras Históricas.* Editado por Edmundo O'Gorman, Universidad Nacional Autónoma de México, Instituto de Investigaciones Históricas, Serie de historiadores y cronistas de Indias; 4, México.

ALVAREZ, C. 1980, *Diccionario etnolingüístico del idioma maya yucateco colonial.* 1a ed. Universidad Nacional Autónoma de México, Instituto de Investigaciones Filológicas, Centro de Estudios Mayas: México.

ANDRES, Ch.R. and PYBURN, K.A. 2004, 'Out of sight: the Postclassic and early Colonial periods at Chau Hiix, Belize', in *The Terminal Classic in the Maya lowlands: collapse, transition and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, pp. 402-423.

ANDREWS, A.P., WYLLYS ANDREWS E., and ROBLES CASTELLANOS, .F. 2003, 'The northern Maya collapse and its aftermath', *Ancient Mesoamerica*, vol. 14, no. 1, pp. 151-156.

ANDREWS, E.W. 1970, *Balankanche, throne of the tiger priest*. Middle American Research Institute, Tulane University: New Orleans.

ANDREWS, G.F. 1995, *Pyramids and palaces, monsters and masks: the golden age of Maya architecture.* Lancaster: Labyrinthos, California.

ANTONIO de CIUDAD REAL, 1984, Calepino maya de Motul [Diccionario de Motul, maya, español], R. Acuña, ed. México: Instituto de Investigaciones Filológicas, Universidad Nacional Autónoma de México.

ARNAULD, Ch., CAROT, P., and FAUVET-BERTHELOT, M.F. 1993, *Arqueología de las lomas en la cuenca lacustre de Zacapu, Michoacán, México*. Cuadernos de Estudios Michoacanos, 5, Centre d'études mexicaines et centraméricaines, México.

ARNAULD, M.C. and ARREDONDO, E. 2002, *Plaza Principal, Estructura 6E-13 y 6E-1: Excavaciones y descripción*, Proyecto Petén-Noroccidente La Joyanca, Informe no. 4, cuarta temporada de campo, 2002, Centre d'études mexicaines et centraméricaines, Guatemala.

ARNAULD, M.C. and SAINT-DIZIER, T. 2001, *Plaza Principal, Estructura 6E-12: excavaciones y descripción*, Proyecto Petén-Noroccidente La Joyanca, Informe no. 3, tercera temporada de campo 2001, Centre d'études mexicaines et centraméricaines, Guatemala.

ASHMORE, W., YAEGER, J., and ROBIN, C. 2004, 'Commoner sense: Late and Terminal Classic social strategies in the Xunantunich area', in *The Terminal Classic in the Maya lowlands: collapse, transition and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, Colorado, pp. 302-321.

BAHN, P. editor 1993, *Collins dictionary of archaeology*. ABC-CLIO: Santa Barbara, California.

BALL, J.W. 1974, 'A teotihuacan-style cache from the Maya lowlands', *Archaeology*, vol. 27, no. 1, pp. 2-9.

BALL, J.W. 1977, *The archaeological ceramics of Becan, Campeche, Mexico*. Middle American Research Institute, Tulane University: New Orleans.

BALL, J.W. 1983, 'Teotihuacan, the Maya, and ceramic interchange: a contextual perspective', in *Highland-lowland interaction in Mesoamerica: interdisciplinary approaches*, A.G. Miller, ed., Dumbarton Oaks Research Library and Collections, Washington D.C., pp. 125-145.

BANCROFT, H.H. 1967, *The native races*. Arno Press: New York; Toronto.

BARRERA VÁSQUEZ, A. 1980, *Diccionario Maya Cordemex: Maya-Español, Español-Maya*. Cordemex: Mérida, México.

BECKER, M.J. 1999, *Excavations in residential areas of Tikal: groups and shrines.* Tikal Reports, no. 21. University Museum Monograph 104, University Museum Press, Philadelphia.

BECKER, M.J. 2001, 'Households at Tikal, Guatemala: it's what's out back that counts', in *Reconstruyendo la ciudad Maya: el urbanismo en las sociedades antiguas*, vol. 6, A. Ciudad Ruiz, M.J. Iglesias Ponce de León, and M.C. Martínez, eds., Publicaciones de la SEEM, Sociedad Española de Estudios Maya, Madrid, pp. 427-460.

BELL, C.M. 1997, *Ritual: perspectives and dimensions*. Oxford University Press: New York; Oxford.

BENAVENTE, [Fray] TORIBIO de (Motolinía) 1971, *Memoriales, o, Libro de las cosas de la Nueva España y de los naturales de ella: nueva transcripción paleográfica del manuscrito original, con inserción de las porciones de La historia de los Indios de la Nueva España que completan el texto de Los memoriales*. Por E. O'Gorman. 2a ed. Universidad Nacional Autónoma de México, Instituto de Investigaciones Históricas: México.

BENAVIDES, A. 1995, 'El norte de la zona Maya en el Clásico', in *Historia Antigua de México*, vol. II, L. Manzanilla and L. Lopez, eds., INAH, UNAM, Grupo Editorial Miguel Angel Porrúa, México, pp. 101-137.

BENYO, J.C. 1979, *The pottery censers of Quiriguá, Izabal, Guatemala,* Unpublished Master's thesis, State University of New York, Albany.

BERDAN, F. and ANAWALT, P. 1992, *The Codex Mendoza*. University of California Press: Berkeley.

BLOM, F. and La FARGE, O. 1992, 'Desde Puerto de México hasta Palenque [originally published 1926-1927]', in *Comalcalco*, E. Mejía Pérez Campos and L.M. Silva, eds., Instituto Nacional de Antropología e Historia, México, pp. 61-175.

BOREMANSE, D. 1999, 'Ritual de ofrenda de primicias en la religión Maya Lacandona, *Anales de la Academia de Geografía e Historia de Guatemala*, 74, pp. 237-264.

BORHEGYI, S.F. 1959, 'The composite or "assemble it yourself" censer: a new lowland Maya variety of the three-pronged incense burner', *American Antiquity*, vol. 25, no. 1, pp. 51-58.

BOUCHER, S. and PALOMO, Z. 2000, 'Cerámica ritual de Calakmul', *Arqueología Mexicana*, vol. VII, no. 42, pp. 34-39.

BRASWELL, G.E., GUNN, J.D., DOMÍNGUEZ CARRASCO, M.R., FOLAN, W.J., FLETCHER, L.A., MORALES LÓPEZ, A., and GLASCOCK, M.D. 2004, 'Defining the Terminal Classic at Calakmul, Campeche', in *The Terminal Classic in the Maya lowlands: collapse, transition and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, Colorado, pp. 162-194.

BRICKER, V.R. 1984, 'Las ceremonias de año nuevo y los monumentos Clásicos Mayas', in *Investigaciones recientes en el area Maya. XVII Mesa Redonda*, vol. 1. Sociedad Mexicana de Antropología, San Cristóbal de las Casas, México, pp. 227-246.

BRICKER, V.R. 1986, *A grammar of Mayan hieroglyphs*. Middle American Research Institute, Tulane University: New Orleans.

BROWN, C.T. and WITSCHEY, W.R. 2008, The electronic Atlas of Ancient Maya sites. Available online at http://mayagis.smv.org/maps_of_the_Maya_area.htm.

BRUCE, R. 1973, 'Figuras ceremoniales de hule', *Boletín del Instituto Nacional de Antropología e Historia*, Epoca II, no. 5, pp. 25-34.

BRUNER, E.M. 1986, 'Experience and its expression', in *The Anthropology of Experience*, V.W. Turner and E.M. Bruner, eds., University of Illinois press, Urbana, pp. 3-33.

CAMPOS, T. 1983, 'Sistema médico de los Tojolabales', in *Los legítimos hombres*, vol. 3 M. H. Ruz, ed., Universidad Nacional Autónoma de México, Centro de Estudios Mayas, México, pp. 195-234.

CARMEAN, K., DUNNING, N., and KOWLASKI, J. 2004, 'High times in the hill country: a perspective from the Terminal Classic Puuc region', in *The Terminal Classic in the Maya lowlands: collapse, transition and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, pp. 424-449.

CASAL, U.A. 1954, *Incense*. The transaction of the Asiatic society of Japan.

CASAS, [Fray] B. de las 1966, *Los indios de México y Nueva España: antología*. Edition, prologue, appendix, and notes by E. O'Gorman in collaboration with J.A. Manrique. 7 edition. Editorial Porrúa: México.

CASO, A. 1958, *The Aztecs: people of the sun*. University of Oklahoma Press: Norman.

CASO, A. 1964, *Codex Selden 3135 (A.2)*. [A fascimile of Arch. Selden M.S. (A.72(3), in the Bodleian library with 'Interpretacion del Códice Selden' by Alfonso Caso, in Spanish and in an English translation by Jacinto Quirarte, revised by John A. Paddlock]. Sociedad Mexicana de Antropología: México D.F.

CASO, A. 1966, *Interpretación del Códice Colombino*. Sociedad Mexicana de Antropología: México D.F.

CASO, A., BERNAL, I., and ACOSTA, J. R. 1967, *La cerámica de Monte Albán*. Instituto Nacional de Antropología e Historia: México D.F.

CASTILLO TEJERO, N. 1972, La cerámica pintada en Mesoamérica como marcador de horizonte, XI International Congress of Americanists (Rome, 1972), pp. 117-122.

CASTORENA, J., GARZA VALDEZ, L.A., and STROSS, B. 1993, Archaeological sample identification as Copal (Bursera Bipinnata) by Capillary Gas Chromatography/ Mass Spectrometry. Paper/Report presented to the Society of American Archaeologists in St. Louis, Missouri, 1993.

CHASE, A.F. and CHASE, D.Z. 1996a, 'A mighty Maya nation: how Caracol built an empire by cultivating its "middle class"', *Archaeology*, vol. 49, no. 5, pp. 67-72.

CHASE, A.F. and CHASE, D.Z. 1996b, 'The organization and composition of Classic lowland Maya society: the view from Caracol, Belize', in *Eighth Palenque Round Table, 1993*, M.G. Robertson, M.J. Macri, and J. McHargue, eds., Pre-Columbian Art Research Institute, San Francisco, California, pp. 213-222.

CHASE, A.F. and CHASE, D.Z. 1987 Investigations at the Classic Maya city of Caracol, Belize: 1985-1987. Pre-Columbian Art Research Institute, Monograph 3, San Francisco, California.

CHASE, A.F. and CHASE, D.Z. 2000, Epicentral ring settlement: report of the Spring 2000 field season at Caracol, Belize. Report submitted to the Ahau Foundation, University of Central Florida, Orlando. Available online at www.caracol.org/reports/2000.php.

CHASE, A.F. and CHASE, D.Z. 2004, 'Terminal Classic status-linked ceramics and the Maya "collapse": de facto refuse at Caracol, Belize', in *The Terminal Classic in the Maya lowlands: collapse, transition and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, Colorado, pp. 342-366.

CHASE, A.F. and CHASE, D.Z. 2005, Searching for Caracol's last urbanities: continued investigation of small structures in and near Caracol's epicenter, 2005. Field report of the Caracol Archaeological Project. Report submitted to the Belize Institute of Archaeology. Department of Anthropology, University of Central Florida, Orlando. Available online at www.caracol.org/repors/2005.php.

CHASE, D.Z. 1988, 'Caches and censerwares: meaning from Maya pottery', in *A pot for all r easons: ceramic ecology revisited*, Laboratory of Anthropology, Temple University, Philadelphia, pp. 81-104.

CHASE, D.Z. and CHASE, A.F. 1982, 'Yucatec influence in Terminal Classic Northern Belize', *American Antiquity*, vol. 47, no. 596, pp. 614.

CHASE, D.Z. and CHASE, A.F. 1994, *A contextual approach to the ceramics of Caracol, Belize*. Pre-Columbian Art Research Institute, monograph 7, San Francisco, California.

CHASE, D.Z. and CHASE, A.F. 1998, 'The architectural context of caches, burials, and other ritual activities for the Classic period Maya (as reflected in Caracol, Belize)', in *Function and meaning in Classic Maya architecture: a symposium at Dumbarton Oaks, 7th and 8th October 1994*, S.D. Houston, ed., Dumbarton Oaks Research Library and Collection, Washington D.C., pp. 299-332.

CHASE, D.Z. and CHASE, A.F. 2004, 'Hermeneutics, transitions, and transformations in Classic to Postclassic Maya society', in *The Terminal Classic in the Maya lowlands: collapse, transition, and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, Colorado, pp. 12-27.

CHRISTENSEN, A.F. 1997, History, myth, and migration in Mesoamerica. Paper presented at the annual meeting of the American Society for Ethnohistory, Portland, November 7, 1996.

CHUNG, H.S. 2000, *Chichen Itza de 800 a 1200 D.C.,* Unpublished Doctoral thesis, Estudios Mesoamericanos, Universidad Nacional Autónoma de México, México, D.F.

CIARAMELLA, M.A. 2002, *The bee-keepers in the Madrid Codex: Los apicultores en el Códice de Madrid*. Research Reports on Maya Writing 52, Center for Maya Research, Washington D.C.

CLASSEN, C. 1993, *Worlds of sense: exploring the senses in history and across cultures*. Routledge: London.

CLASSEN, C. 1994, *Aroma: the cultural history of smell*. Routledge: London.

CLASSEN, C. 1997, 'Foundations for an anthropology of the senses', *International Social Science Journal*, vol. 153, pp. 401-412.

CLASSEN, C. 1998, *The color of angels: cosmology, gender, and the aesthetic imagination*. Routledge: London; New York.

CLAVIJERO, F. 1945, *Historia antigua de México*. Editorial Porrúa: México.

COBEAN, R.H. 1990, *La cerámica de Tula, Hidalgo*. 1. ed. Instituto Nacional de Antropología e Historia: México, D.F.

COBOS PALMA, R. 1998a, 'Chichen Itza: análisis de una comunidad del período Clásico Terminal', *Los investigadores de la cultura Maya*, vol. 6, no. 2, pp. 316-331.

COBOS PALMA, R. 1998b, Chichen Itza y el Clásico Terminal en las tierras bajas Mayas, XI Simposio de Investigaciones Arqueológicas en Guatemala, 1997, Museo Nacional de Arqueología y Etnología, Guatemala.

COBOS PALMA, R. 2004, 'Chichen Itza: settlement and hegemony during the Terminal Classic period', in *The Terminal Classic in the Maya lowlands: collapse, transition and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, pp. 517-544.

COE, W.R. 1959, *Piedras Negras archaeology: artifacts, caches, and burials*. The University Museum, University of Pennsylvania: Philadelphia.

COE, W.R. 1962, 'A summary of excavation and research at Tikal, Guatemala: 1956-61', *American Antiquity*, vol. 27, pp. 479-507.

COE, W.R. 1967, *Tikal, a handbook of the ancient Maya ruins: with a guide map*. The University Museum, University of Pennsylvania: Philadelphia.

COE, W.R. 1990, Explorations in the Great Plaza, North Terrace, and North Acropolis of Tiikal. Tikal Reports, no. 14, The University Museum, University of Pennsylvania, Philadelphia.

COE, W.R. and BROMAN, V.L. 1958, *Excavations in the Stela 23 Group*. Tikal Reports, no. 2, The University Museum, University of Pennsylvania, Philadelphia.

COGGINS, C.C. and LADD J.M. 1992, 'Copal and rubber offerings', in *Artifacts from the Cenote of Sacrifice, Chichen Itza, Yucatan: textiles, basketry, stone, bone, shell, ceramics, wood, copal, rubber, other organic materials, and mammalian remains*, Harvard University, Cambridge, Massachusetts, pp. 345-357.

COOK, O. 1921, *Milpa agriculture, a primitive tropical system*. Annual Report of the Smithsonian Institution, 1919, Government print, Washington D.C.

COOKE, C.W. 1931, 'Why the Mayan cities of the Peten District, Guatemala, were abandoned', *Journal of the Washington Academy of Sciences*, vol. 21, no. 13, pp. 283-287.

CORZO, L., ALBARADO, M.T., URBINA, M.A., and LAPORTE, J.P. 1997, *Reconocimiento y exploración en Ucanal: un sitio en la ribera Oeste del Río Mopan.* Atlas Arqueológico de Guatemala, Reporte 11, Instituto de Antropología e Historia, Guatemala.

COWGILL, G.L. 1979, 'Teotihuacan, internal militarism and the fall of the Classic Maya', in *Maya Archaeology and Ethnohistory*, N. Hammond and G.R. Willey, eds., University of Texas Press, Austin, pp. 51-62.

CRANE, E. 1983, *The archaeology of beekeeping*. Duckworth: London.

CRANE, E. and GRAHAM, A.J. 1985, *Bee hives of the ancient world*. International Bee Research Association.

CUEVAS GARCÍA, M. 2000, 'Los incensarios del Grupo de las Cruces, Palenque', *Arqueología Mexicana*, vol. VIII, no. 45, pp. 54-61.

CUEVAS GARCÍA, M. 2004, *Los incensarios compuestos del Grupo de las Cruces: evidencia de rituales Mayas en Palenque, Chiapas,* Tesis doctoral en Estudios Mesoamericanos, Universidad Nacional Autónoma de México, México D.F.

CUEVAS GARCÍA, M. and BERNAL ROMERO, G. 2002, 'La función de los incensarios compuestos del Grupo de las Cruces', *Estudios de Cultura Maya*, vol. 22, pp. 13-32.

CULBERT, T.P. 1973 a, *The Classic Maya collapse*. 1st ed. University of New Mexico Press: Albuquerque.

CULBERT, T.P. 1973 b, 'The Maya downfall at Tikal', in *The Classic Maya collapse*, T.P. Culbert, ed., University of New Mexico Press, Albuquerque, pp. 63-92.

DANEELS, A. 1995, 'La cerámica Posclásica de la cuenca baja del Jamapa-Cotaxtla', *Arqueología*, vol. 13-14, pp. 85-88.

DEAL, M. 1982, 'Functional variation of Maya spiked vessels: a practical guide', *American Antiquity*, vol. 47, no. 3, pp. 614-633.

DEMAREST, A. 1978, 'Interregional conflict and 'situational ethics' in Classic Maya warfare', in *Codex Wauchope: Festschrift in honor of Robert Wauchope*, M. Giardino, B. Edmonson, and W. Creamer, eds., Tulane University, New Orleans, pp. 101-111.

DEMAREST, A. 2004, 'After the maelstrom: collapse of the Classic Maya kingdoms and the Terminal Classic in western Peten', in *The Terminal Classic in the Maya lowlands: collapse, transition and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, pp. 102-124.

DEMAREST, A. and ESCOBEDO H. 1998, Acontecimientos, procesos y movimientos de poblaciones en el Clásico Terminal y el colapso Maya, XI Simposio Nacional de Investigaciones Arqueologicas en Guatemala, 1997, J.P. Laporte and H. Escobedo, eds., Museo Nacional de Arqueología y Etnología, Guatemala, pp. 699-712.

DEMAREST, A., RICE, P.M., and RICE, D.S. 2004a, *The Terminal Classic in the Maya lowlands: collapse, transition, and transformation*. University Press of Colorado: Boulder.

DEMAREST, A., RICE, P.M., and RICE, D.S. 2004b, 'The Terminal Classic in the Maya lowlands: assessing collapses, terminations, and transformations', in *The Terminal Classic in the Maya lowlands: collapse, transition, and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, Colorado, pp. 545-572.

DERHAM, B., HERON, C., AVELING, E., and MAITLAND, D. 2000, 'Organic chemistry and the Mary Rose', *Education in Chemistry*, vol. 37, no. 3, pp. 78-81.

DIEHL, R.A. 1983, *Tula: the Toltec capital of ancient Mexico*. Thames and Hudson: London.

DILTHEY, W. 1976, *Dilthey: selected writings*. Edited, translated (from the German) and introduced by H.P. Rickman. Cambridge University Press: Cambridge.

DURÁN, [Fray] D. de 1967, *Historia de las Indias de la Nueva España e islas de la tierra firme, escrita por Fray Diego de Durán, Dominico, en el siglo XVI.* Edición paleográfica de manuscrito autógrafo de Madrid, con introducciones, notas y vocabularios de palabras indígenas y arcaicas por A. M. Garibay Kintana, tomo 2, Editorial Porrúa, México.

EDMONSON, M.S. 1982, *The ancient future of the Itza: the book of Chilam Balam of Tizimin*. 1st ed. University of Texas Press: Austin.

EMERY, K.F. and AOYAMA, K. 2007, 'Bone, shell, and lithic evidence for crafting in elite Maya households at Aguateca, Guatemala', *Ancient Mesoamerica*, vol. 18, no. 1, pp. 69-89.

ERASMUS, C.J. 1965, 'Monument building: some field experiments', *Southwest Journal of Anthropology*, vol. 21, no. 4, pp. 277-301.

ESCOBEDO, H., WRIGHT, L., and CHINCHILLA, M. 1990, *Operación DP8: Investigaciones en 'El Duende'*, Proyecto Arqueológico Regional Petexbatún, Informe preliminar no. 2, segunda temporada 1990, A.A. Demarest and S.D. Houston, eds, Instituto de Antropología e Historia, Guatemala, and Vanderbilt University, Nashville, Tennessee, pp. 277-333.

FASH, W.L. 1991, *Scribes, warriors, and kings: the city of Copan and the ancient Maya*. Thames and Hudson: New York.

FASH, W.L., ANDREWS, W., and MANAHAM, T.K. 2004, 'Political decentralization, dynastic collapse, and the Early Postclassic in the urban center of Copan, Honduras', in *The Terminal Classic in the Maya lowlands: collapse, transition and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, Colorado, pp. 260-287.

FASQUELLE, R.A. and FASH W.L. 1989, 'Copan: A royal tomb discovered', *National Geographic*, vol. 176, no. 4, pp. 480-487.

FERNÁNDEZ de OVIEDO y VALDÉS, G. 1959, *Historia general y natural de las Indias*. Biblioteca de Autores Españoles. Ediciones Atlas: Madrid.

FERREE, L. 1972, *The pottery censers of Tikal, Guatemala,* Unpublished Ph.D. thesis, Department of Anthropology, Southern Illinois University.

FOIAS, A.E. 1992, *Análisis preliminar de la cerámica del Petexbatún*, Proyecto Arqueológico Regional Petexbatún, Informe preliminar no. 4, cuarta temporada 1992. Instituto de Antropología e Historia de Guatemala and Vanderbilt University, Nashville Tennessee.

FOIAS, A.E. 1996, *Changing ceramic production and exchange systems and the Classic Maya collapse in the Petexbatun region,* Unpublished Ph.D. dissertation, Department of Anthropology, Vanderbilt University, Nashville, Tennessee.

FOIAS, A.E. and BISHOP, R.L. 1997, 'Changing ceramic production and exchange in the Petexbatun region, Guatemala: reconsidering the Classic Maya collapse', *Ancient Mesoamerica*, vol. 8, no. 2, pp. 275-291.

FORNE, M. 2005, *La chronologie cèramique de La Joyanca, nord-ouest du Petén, Guatemala,* Tesis de Doctorado, Universite Paris I-La Sorbonne.

FORNÉ, M. 2006, Cerámica en La Joyanca: cinco años de investigación, XIX Simposio de Investigaciones Arqueológicas en Guatemala, J.P. Laporte, B. Arroyo, and H. Mejía, eds., Museo Nacional de Arqueología y Etnología, Guatemala, pp. 457-473.

FORTES, M. 1962, 'Ritual and office in tribal society', in *Essays on the ritual of social relations*, M. Gluckman, ed., Manchester University Press, Manchester, pp. 53-88.

FOURNIER, P., CERVANTES, J., and BLACKMAN, M.J. 2006, 'Mito y realidad del estilo epiclásico Coyotlatelco', in *El fenómeno Coyotlatelco en el centro de México: tiempo, espacio y significado*, L. Solar, ed., Instituto Nacional de Antropología e Historia, México, pp. 53-82.

FOX, J.W. 1980, 'Lowland to highland mexicanization processes in southern Mesoamerica', *American Antiquity*, vol. 45, no. 1, pp. 43-54.

FOX, J.W. 1989, 'On the rise and fall of the Tulans and Maya segmentary states', *American Anthropologist*, vol. 91, pp. 656-81.

FREIDEL, D.A., SCHELE, L., PARKER, J., KERR, J., and EVERTON, M. 1993, *Maya cosmos: three thousand years on the shaman's path*. 1st ed. W. Morrow: New York.

FRITSCH, P.W. 1997, 'A revision of Styrax (Styraceae) for western Texas, Mexico, and Mesoamerica', *Annals of the Missouri Botanical Garden*, vol. 84, pp. 705-761.

FRY, R.E. 2003, 'Social dimentions in ceramic analysis: a case study from peripheral Tikal', *Ancient Mesoamerica*, vol. 14, no. 1, pp. 85-93.

GANN, T. 1934, Changes in the Maya censor, from the earliest to the latest times, XXIV International Congress of Americanists, Hamburg, 1930, pp. 51-54.

GARCÍA COOK, A. and MERINO CARRIÓN, B.L. 1988, 'Notas sobre la cerámica prehispánica en Tlaxcala', in *Ensayos de alfarería prehispánica e histórica de Mesoamérica, homenaje a Eduardo Noguera Auza*, M.C. Serra Puche and C. Navarrete Cáceres, eds., Instituto de Investigaciones Antropológicas, Serie Antropología, vol. 82, Universidad Nacional Autónoma de México, México D.F., pp. 275-342.

GARCIA-RUIZ, J.F. 1981, 'Le cervelle du ciel: ethnologie du copal au Mexique', *Folklore Americano*, vol. 32, pp. 93-126.

GARZA, M. de la [and others] 1983, *Relaciones histórico-geográficas de la gobernación de Yucatán: (Mérida, Valladolid y Tabasco)*. Fuentes para el estudio de la cultura Maya. Universidad Nacional Autónoma de México, Instituto de Investigaciones Filológicas, Centro de Estudios Mayas: México.

GARZA, M. de la 1990, *Sueño y alucinación en el mundo nahuatl y maya*. 1. ed. Universidad Nacional Autónoma de México, Instituto de Investigaciones Filológicas, Centro de Estudios Mayas: México.

GAXIOLA GONZÁLEZ, M. 1999, 'Huapalcalco y las tradiciones alfareras del Epiclásico', *Arqueología*, vol. 21, pp. 45-72.

GELL, A. 1998, *Art and agency: towards a new anthropological theory*. Clarendon Press: Oxford.

GENNEP, A. V. 1960, *The Rites of Passage*. Routledge and Kegan Paul: London.

GIDDENS, A. 1984, *The constitution of society: outline of the theory of structuration*. Polity: Cambridge.

GLUCKMAN, M. 1954, *Rituals of rebellion in South-east Africa*. Manchester University Press: Manchester.

GLUCKMAN, M. 1958, *Analysis of a social system in Zululand, Rhodes-Livingstone, paper no. 28*, Humanities Press, New York.

GLUCKMAN, M. 1962, 'Les rites de passages', in *Essays on the ritual of social relations*, M. Gluckman, ed., Manchester University Press, Manchester, pp. 1-52.

GOLDSTEIN, M. 1977, 'The ceremonial role of the Maya flanged censer', *Man*, vol. 12, pp. 405-420.

GÓMEZ, O. 1998, Excavaciones en el interior del Templo V, Tikal. XII Simposio de Investigaciones Arqueológicas en Guatemala, 1998, J.P. Laporte, H. Escobedo, and A. C. Monzón de Suasnávar, eds., Ministerio de Cultura y Deportes, Instituto de Antropología e Historia, Asociación Tikal, Guatemala, pp. 191-193.

GOODMAN, F. 1986, 'Body postures and the religious altered state of consciousness: an experimental investigation', *Journal of Humanistic Psycholo lgy*, vol. 26, pp. 81-118.

GRAHAM, E. 1985, 'Facets of Terminal to Postclassic activity in the Stann Creek District, Belize', in *The lowland Maya Postclassic*, A.F. Chase and P.M. Rice, eds., University of Texas Press, Austin.

GRAHAM, E. 1987a, 'Terminal Classic to Early Historic period vessel forms from Belize', in *Maya ceramics*, P.M. Rice and R.J. Sharer, eds., BAR International Series 345, Great Britain, pp. 73-98.

GRAHAM, E. 1987b, 'Resource diversity in Belize and its implications for models of lowland trade', *American Antiquity*, vol. 52, pp. 753-767.

GRAHAM, E. 1989, 'Brief synthesis of coastal site data from Colson Point, Placencia, and Marco González, Belize', in *Coastal Maya trade*, H.F. McKillop and P.F. Healy, eds., Trent University, Peterborough, Ontario, pp. 135-154.

GRAHAM, E. 1991, 'Archaeological insights into Colonial period Maya life at Tipu, Belize', in *Columbian consequences*, D.H. Thomas, ed., Smithsonian Institution Press, Washington, D.C.

GRAHAM, E. 1994, *The highlands of the lowlands: environment and archaeology in Stann Creek District, Belize, Central America*. Monographs in World Archaeology, 19, Prehistory Press, Madison, Wisconsin.

GRAHAM, E. 2000/2001, 'Collapse, conquest and Maya survival at Lamanai, Belize', *Archaeology International* 2000/2001, pp. 52-56.

GRAHAM, E. 2004, 'Lamanai reloaded: Alive and Well in the Early Postclassic', in *Archaeological investigations in the eastern Maya lowlands*, J. Awe, J. Morris, and S. Jones, eds., Institute of Archaeology, NICH, Belize, pp. 223-241.

GRAHAM, E. 2006, 'An ethnicity to know', in *Maya ethnicity: the construction of ethnic identity from Preclassic to Modern Times*, F. Sachse, ed., Acta Mesoamericana 19, Verlag Anton Saur Wein, Markt Scwaben, pp. 109-124.

GRAHAM, J.A. 1973, 'Aspects of non-Classic presences in the inscriptions and sculptural art of Seibal', in *The Classic Maya collapse*, T.P. Culbert, ed., University of New Mexico Press, Albuquerque, pp. 207-219.

GRAHAM, J.A. 1990, 'Monumental sculpture and hieroglyphic inscriptions', in *Excavations at Seibal, Department of Peten, Guatemala*, G.R. Willey, ed., Memoirs of the Peabody Museum of Archaeology and Ethnology, vol. 17, Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, Massachusetts.

Graz 1967, *Codex Tro-Cortesianus (Madrid Codex),* Series Codices Selecti, vol. 8.

GRUBE, N. 2001, *Maya: divine kings of the rain forest*. Kölnemann: Köln.

GRUBE, N. and SCHELE, L. 1991, *Tzuk in the Classic Maya inscriptions*. Texas notes on Pre-Columbian art, writing, and culture, no. 14, Center for the History and Art of Ancient American Culture, University of Texas, Austin.

GUZMAN PEREDO, M. 1972, *Arqueología Subacuática*. Serie Artes de México, vol. 152, México.

HAMMOND, N. and TOURTELLOT, G. 2004, 'Out with a whimper: La Milpa in the Terminal Classic', in *The Terminal Classic in the Maya lowlands: collapse, transition and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., Universtiy Press of Colorado, Boulder, Colorado, pp. 288-301.

HELLMUTH, N.M. 1987, *Monster und Menschen in der Maya-Kunst: Eine Ikonographie der alten Religionen Mexikos und Guatemalas*. Akademische Druck u Verlagsanstalt: Graz, Austria.

HERMES, C.B. 2004, Informe final de actividades realizadas con el material cerámico recuperado durante los trabajos del Proyecto de Alcantarillado del area central de Petén.

HERMES, C.B., NORIEGA GIRÓN, R., and CALDERÓN SANTIZO, Z. 1997, Investigación arqueológica y trabajos de conservación en el edificio 216 de Yaxhá', *Beitraege zur allegemeinen und vergleichenden Archaeologie Band 17*, pp. 255-307.

HERNÁNDEZ, F. 1959, *Historia natural de Nueva España, Hernández, Francisco, 1517-158,* tomos 1 y 2, Translated by José Rojo Navarro, 1a ed, Universidad Nacional Autónoma de México, México, D.F.

HIRTH, K.G. and CYPHERS GUILLEN, A.C. 1988, *Tiempo y asentamiento en Xochicalco*. 1. ed. Universidad Nacional Autónoma de México: México.

HOSLER, D., BURKETT, S.L., and TARKANIAN, M.J. 1999, 'Prehistoric polymers: rubber processing in ancient Mesoamerica', *Science*, vol. 284, pp. 1988-1991.

HOUGH, W. 1887, 'Censers and incense of Mexico and Central America', *Proceedings of the United States National Museum*, vol. 42, pp. 109-137.

HOUSTON, S.D. 2004, The strategies of local religion among the Classic Maya. 9th European Maya Conference. Maya ethnicity. The construction of ethnic identity from Preclassic to Modern times. Bonn, Germany.

HOUSTON, S.D., ESCOBEDO, H., CHILD, M., GOLDEN, Ch., TERRY, R., and WEBSTER, D. 2000, In the land of the Turtle Lords: archaeological investigations at Piedras Negras, Guatemala. In Houston, S.D. (ed), The Piedras Negras project: preliminary report of the 2000 field season, Reports submitted to the Foundation for the Advancement of Mesoamerican Studies. Available online at www.famsi.org.

HOWES, D. 1987, 'Olfaction and transition: an essay on the ritual uses of smell', *Canadian Review of Sociology and Anthropology*, vol. 24, no. 3, pp. 389-416.

IGLESIAS PONCE de LEÓN, M.J. and CIUDAD RUIZ, A. 1994, Exploraciones en el Grupo Suk' che 9, Atlas Arqueológico de Guatemala, Reporte 8, Instituto de Antropología e Historia, Guatemala.

INOMATA T. 1995, *Archaeological investigations at the fortified center of Aguateca, El Petén, Guatemala,* Unpublished Ph.D. thesis, Department of Anthropology, Vanderbilt University.

INOMATA, T. and STIVER, L. 1998, 'Floor assemblages from burned structures at Aguateca, Guatemala: a study of Classic Maya households', *Journal of Field Archaeology*, vol. 25, no. 4, pp. 431-452.

INOMATA, T. and MOSCOSO F. 1991, Operación AG5: Excavaciones en el area de la Calzada*,* in A. Demarest, Inomata, T., Escobedo, H., and Palka, J., eds., Proyecto Arqueológico Regional Petexbatún, Informe Preliminar no. 3, tercera temporada, Vanderbilt University, Nashville, pp. 466-527.

JACKSON, S.E. 2001, PN 41: Excavaciones en la plaza sur del Grupo C, in H. Escobedo and S.D. Houston, eds, Report submitted to the Instituto de Antropología e Historia de Guatemala, Proyecto Arqueológico Piedras Negras, Informe Preliminar no.4, cuarta temporada 2000. Available online at www.famsi.org.

JACKSON, S.E. 2002, Las elites de la corte: una visión desde Piedras Negras, Guatemala, XV Simposio de Investigaciones Arqueológicas en Guatemala, 2001, J.P. Laporte, H. Escobedo, and B. Arroyo, eds, Museo Nacional de Arqueología y Etnología, Guatemala, pp. 806-809.

JIMENÉZ MORENO, W. 1959, 'Síntesis de la historia pretolteca de Mesoamérica', in Esplendor del México antiguo, vol. 2, C. Cook de Leonard, ed., México, pp. 1019-1108.

JANSEN, M.E. and PÉREZ JIMÉNEZ, G.A. 2005, *Codex Bodley: a painted chronicle from the Mixtec highlands, Mexico*. Treasures from the Bodleian library. Bodleian Library: Oxford.

JONES, G.D., KAUTZ, R.B., and GRAHAM, E. 1986, 'Tipu, a Maya town on the Spanish Colonial frontier', *Archaeology*, vol. 39, pp. 40-47.

JONES, L. 1995, *Twin city tales: a hermeneutical reassessment of Tula and Chichen Itza*. University Press of Colorado: Niwot, Colorado.

JONG, H. 1999, *The land of corn and honey: the keeping of stingless bees (Meliponiculture) in the ethnoecological environment of Yucatan (Mexico) and El Salvador,* Ph.D. thesis, Univerisiteit Utrecht, Utrecht University Press, Utrecht.

KAPLAN, D. 1963, 'Men, monuments, and political systems', *Southwest Journal of Anthropology*, vol. 19, pp. 397-410.

KERR, J. editor 2000, *The Maya vase book, Vol. 6: A corpus of rollout photographs of Maya vases*. Kerr Associates: New York.

KIDDER, A. 1950, 'Introduction', in *Uaxactun, Guatemala: excavations of 1931-1937*, Carnegie Institution of Washington, publication 588, Washington, pp. 1-12.

KOCKELMAN, P. 1999, *The collection of copal among the Q'eqchi Maya: shifting liasons and lasting salience*. Research in Economic Anthropology, vol. 20, pp. 163-194.

KOWLASKI, J.K. 1989, 'Who am I among the Itza?: links between northern Yucatan and the western Maya lowlands and highlands', in *Mesoamerica after the decline of Teotihuacan AD 700-900*, R. Dile and J.C. Berlo, eds., Dumbarton Oaks Research Library Collection, Washington D.C., pp. 173-185.

KUBLER, G. 1975, *The art and architecture of ancient America: the Mexican, Maya, and Andean*. 2nd ed. The pelican history of Art. Penguin: Harmondsworth, Baltimore.

LACADENA, A. 2006*,* Excavaciones en Machaquilá, temporada 2005: El recinto cuadrilobulado de la Playa A, Atlas Arqueológico de Guatemala, Reporte 20, Dirección General del Patrimonio Cultural y Natural, Ministerio de Cultura y Deportes, Guatemala, pp. 74-123.

LANDA, [Fray] D. de 1941, *Landa s Relación de las cosas de Yucatán.* A translation. Edited with notes by Alfred M. Tozzer. [With a portrait.] Papers of the Peabody Museum of Archaeology and Ethnology, vol. 18, Harvard University, Cambridge, Massachusetts.

LANDA, [Fray] D. de 1959, *Relación de las cosas de Yucatán*. Introducción por Angel Ma. Garibay K., 8a ed. Editorial Porrúa: México.

LANDA, [Fray] D. de 1978, *Relación de las cosas de Yucatán*. 11a ed., con un apéndice en el cual se publican varios documentos importantes y cartas del autor. Editorial Porrúa: México.

LAPORTE, J.P. 2003, 'La tradición funeraria Prehispánica en la región de Petén, Guatemala: una visión desde Tikal y otras ciudades', in *Arqueología de la eternidad: la muerte en la cultura Maya*, A. Ciudad Ruiz, M. Ruz, and M.J. Iglesias, eds., Sociedad Española de estudios Mayas and Centro de Estudios Mayas, UNAM, Madrid and México, pp. 49-76.

LAPORTE, J.P. 2004, 'Terminal Classic settlements and polity in the Mopan Valley, Peten, Guatemala', in *The Terminal Classic in the Maya lowlands: collapse, transition, and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice eds., The University Press of Colorado, Boulder, Colorado, pp. 195-230.

LAPORTE J.P. and IGLESIAS PONCE de LEÓN, M.J. 1999, 'Mas allá de Mundo Perdido: investigación en grupos residenciales de Tikal', *Mayab*, vol. 12, pp. 32-57.

LAPORTE J.P. and MEJÍA, H. 2002, 'Ucanal: una ciudad del Río Mopan en Petén, Guatemala', *Utz' ib*, vol. 1, no. 2, pp. 1-71.

LAPORTE, J.P. and MEJÍA, H. 2005, 'Grupos en la periferia de Ixkun', in *Ixkun, Petén, Guatemala: Exploraciones en una ciudad del Alto Mopan 1985-2005*, Atlas Arqueológico de Guatemala, Instituto de Antropología e Historia, Ministerio de Cultura y Deportes Guatemala, pp. 113-160.

LAPORTE, J.P. and MEJÍA, H. 2006 a, 'Los sitios arqueológicos de la entidad politica de Sacul, Petén' in *Sacul, Petén, Guatemala: exploraciones en una entidad poítica de las montañas Mayas, 1985-2006*, J.P. Laporte and H.E. Mejía, eds., Atlas Arqueológico de Guatemala, Dirección General del Patrimonio Cultural y Natural, Ministerio de Cultura y Deportes, Guatemala, pp. 276-377.

LAPORTE, J.P. and MEJÍA, H.E. 2006 b, 'Exploraciones en el grupo Este del area central de Sacul: la plaza D', in *Sacul, Petén, Guatemala: exploraciones en una entidad política de las montañas Mayas 1985-2006*, J.P. Laporte and H.E. Mejía, ed., Atlas Arqueológico de Guatemala, Dirección General del Patrimonio Cultural y Natural, Ministerio de Cultura y Deportes, Guatemala, pp. 106-146.

LAPORTE, J.P. and TORRES, C.R. 1993, Proyecto Sureste de Petén, Segunda temporada, Noviembre 1987-Julio 1988. In Reconocimientos Arqueológicos en el Valle de Dolores, Reporte no. 1, Atlas Arqueológico de Guatemala, Guatemala.

LAPORTE, J.P., WOLLEY, C., FLORES, R.M., and VALDIZÓN, M. 1991, Patios para el juego de pelota de Ixtonton y grupos asociados, Atlas Arqueológico de Guatemala, Reporte 5, Instituto de Antropología e Historia, Ministerio de Cultura y Deportes, Guatemala.

LAUGHLIN, R.M. 1975, *The Great Tzotzil dictionary of San Lorenzo Zinacantan*. Smithsonian Contributions to Anthropology, no. 19, Smithsonian Institution Press, Washington.

LEE, Th.A. 1979, 'Early Colonial Coxoh Maya syncretism in Chiapas, Mexico', *Estudios de Cultura Maya*, vol. 12, pp. 93-109.

LEÓN, N. 1982, *Códice Sierra: traducción al español de su texto nahuatl y explicación de sus pinturas jeroliíficas*. Editorial Innovación: México.

LEWIN, M. 2004, *Access 2003 in easy steps*. Computer Step: Southam.

LINCOLN, Ch. 1986, 'The chronology of Chichen Itza: a review of the literature', in *Late lowland Maya civilization: Classic to Postclassic*, J.A. Sabloff and E.W. Andrews, eds., University of New Mexico press, Albuquerque, pp. 141-198.

LONA, N.V. 2004a, *El copal en las ofrendas del Templo Mayor de Tenochtitlan,* Tesis de doctorado, Universidad Nacional Autónoma de México.

LONA, N.V. 2004b, 'El copal en las ofrendas del Templo Mayor', *Arqueología Mexicana*, vol. 12, no. 67, pp. 66-71.

LONGYEAR, J.M. 1952, *Copan ceramics: a study of southeastern Maya pottery*. Carnegie Institution of Washington, Publication 597, Washington D.C.

LOOPER, M.W.G. 2003, *Lightning warrior: Maya art and kingship at Quiriguá*. 1st ed. University of Texas Press: Austin.

LÓPEZ VARELA, S.L. 1989, *La clasificación de la cerámica de Yaxchilan, Chiapas, México: una reevaluación,* Tesis de licenciatura en Arqueología, Escuela Nacional de Antropología e Historia, México.

LÓPEZ VARELA, S.L. 1992, 'Ceramic units from Yaxchilan, Chiapas, Mexico', *Cerámica de Cultura Maya*, vol. 16, pp. 18-21.

LÓPEZ LUJÁN, L. 2004, 'Mexicas', in Treasures of the National Museum of Anthropology, Mexico. Essays by Sergio Raúl Arroyo [*et al.*], Thames and Hudson in association with Turner/ CONACULTA-INAH, London, 193-216.

LÓPEZ PÉREZ, C., CLAUDIA, N., and MANZANILLA, L. 2006, 'Atributos morfológicos y estilísticos de la cerámica Coyotlatelco en el centro ceremonial de Teotihuacan', in *El fenómeno Coyotlatelco en el centro de México: tiempo, espacio y significado*, L. Solar, ed., Instituto Nacional de Antropología e Historia, México, pp. 215-230.

LOTEN, S.H. and PENDERGAST D. 1984, *A lexicon for Maya architecture*. Royal Ontario Museum: Toronto.

LOUNSBURY, F. 1973, 'On the derivation and reading of the 'Ben-Ich' prefix', in *Mesoamerican writing systems*, E. Benson, ed., Dumbarton Oaks Research Library and Collection, Washington D.C., pp. 99-143.

LOVE, B. 1987, *Glyph T93 and Maya 'Hand-scattering' events*, Research reports on Maya writing 4 & 5, Center for Maya Research, Washington, D.C.

LUNA ERREGUERENA, P. 2000, 'El nevado de Toluca. Sitio de veneración prehispánica', *Arqueología Mexicana*, vol. VIII, no. 43, pp. 47-49.

LUXTON, R. 1981, *The mystery of the Mayan hieroglyphs: the vision of an ancient tradition*. Harper and Row: San Francisco.

MACKIE, E.W. 1961, 'New light on the end of Classic Maya Culture at Benque Viejo, British Honduras', *American Antiquity*, vol. 27, no. 2, pp. 216-224.

MANAHAN, T.K. 2003, *The collapse of complex society and its aftermath: a case study from the Classic Maya site of Copan, Honduras,* Ph.D. dissertation, Department of Anthropology, Vanderbilt University.

MANAHAN T. K. 2004, 'The way things fall apart: social organization and the Classic Maya collapse of Copan', *Ancient Mesoamerica*, vol. 15, pp. 107-126.

MARQUINA, I. 1951, *Arquitectura Prehispánica*. Memorias del INAH, no.1, Instituto Nacional de Antropología e Historia, México.

MARTÍNEZ MURIEL, A. 2004, 'Mayas', in *Treasures of the National Museum of Anthropology, Mexico*. Essays by Sergio Raúl Arroyo [*et al.*], Thames and Hudson in association with Turner/ CONACULTA-INAH, London, 257-294.

MARTÍNEZ MURIEL, A. 1987, *Catálogo de nombres vulgares y científicos de plantas Mexicanas*. Editorial Fondo de Cultura Económica: México.

MASON, G. 1928, *Pottery and other artifacts from the caves in British Honduras and Guatemala.* Indian notes and monographs, no. 47, Heye Foundation, Museum of the American Indian, New York.

MASON, J.A. 1943, 'The American collections of the University Museum: the ancient civilization of Middle America', *Bulletin of the University of Pennsylvania Museum*, vol. 10, no. 1 and 2, University Museum, University of Pennsylvania, Philadelphia.

MATA AMADO, G. 2001, 'Tapaderas de incensarios de forma cónica con chimenea procedentes de Mexicanos, area subacuática del lago de Amatitlán, Guatemala', Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Instituto de Antropología e Historia, Guatemala, pp. 531-543.

MARKENS, R. 2008, 'Advances in defining the Classic-Postclassic portion of the Valley of Oaxaca ceramic chronology' in After Monte Alban: transformation and negociation in Oaxaca, Mexico. J.P. Blomster, ed., University Press of Colorado, Boulder, pp. 49-94.

MAUDSLAY, A.P. 1974, *Biologia Centralli-Americana*, in Archaeology, vol. 1, O. Salvin, ed., Milpatron Publishing, New York.

McCAFFERTY, G.G. 2007, 'What else is new? A Cholula-Centric perspective on lowland/highland interaction during the Classic/Postclassic transition', in *Twin Tollans: Chichen Itza, Tula, and the Epiclassic to Early Postclassic Mesoamerican world*, J.K. Kowlaski and C. Kristan-Graham, eds., Dumbarton Oaks Research Library and Collection, Washington D.C., pp. 449-481.

McGEE, R.J. 1990, *Life, ritual, and religion among the Lacandon Maya*. Wadsworth Pub. Co.: Belmont, California.

McKILLOP, H. 2002, *Salt: white gold of the ancient Maya*. University Press of Florida: Gainesville.

MEJÍA, H.E. 2001, Exploraciones en Calzada Mopan, Dolores: el cerro sur del Grupo 1 al noreste del area Central, Atlas Arqueológico de Guatemala, Reporte 15, Instituto de Antropología e Historia, Guatemala, pp. 116-120.

MEJÍA, H. and LAPORTE, J.P. 2004, Exploración en El Reinado (NI TUUNAL), La Libertad, Petén: La Acrópolis y la Plaza A, Atlas Arqueológico de Guatemala, Reporte 18, Instituto de Antropología e Historia, Guatemala, pp. 190-242.

MICHENER, C.D. 1974, *The social behavior of the bees: a comparative study*. Belknap Press of Harvard University: Cambridge, Massachusetts.

MILBRATH, S. and PERAZA LOPE, C. 2003, 'Revisiting Mayapan: Mexico's last Maya capital', *Ancient Mesoamerica*, vol. 14, no. 1, pp. 1-46.

MILLER, M.E. 1993, 'On the eve of the collapse: Maya art of the eighth century', in *Lowland Maya civilization in the Eighth century A.D.*, J.A. Sabloff and J.S. Henderson, eds., Dumbarton Oaks Research Library and Collection, Washington D.C., pp. 355-413.

MILLER, M.E. 1999, *Maya art and architecture*. Thames and Hudson: London.

MOLINA, [Fray] A. de 1970, *Vocabulario en lengua castellana y mexicana y mexicana y castellana*. Estudio preliminar de Miguel León-Portilla. Editorial Porrúa: México.

MONAGHAM, J. 1998, 'Dedication: ritual or production?', in *The sowing and the dawing: termination, dedication and transformation in the archaeological and ethnographic record of Mesoamerica*, S.B. Mock, ed., University of New Mexico Press, Albuquerque, pp. 47-52.

MONRADES, N. 1925, *Joyfull Newes out of the newe found worlde*. Constable and Co., Alfred A. Knoph: London; New York.

MONTÚFAR LÓPEZ, A. 2004, 'Identidad y simbolismo del copal prehispánico y reciente', *Arqueología (México)*, vol. 33, pp. 60-71.

MOREHART, C.T., LENTZ, D.L., and PRUFER, K.M.L. 2005, 'Wood of the Gods: the ritual use of pine (pinus spp.) by the ancient lowland Maya', *Latin American Antiquity*, vol. 16, no. 3, pp. 255-274.

MORLEY, S.G. 1920, *The inscriptions of Copan*. Carnegie Institution of Washington, Publication 219, The Institution, Washington D.C.

MORLEY, S.G. 1946, *The ancient Maya*. Stanford University Press: Standford.

MORLEY, S.G. 1956, *The ancient Maya*. Revised by G.W. Brainerd. Standford University Press: Standford.

MULLER, F. 1978, *La alfarería de Cholula*. Serie Arqueoogía, Instituto Nacional de Antropología e Historia, México D.F.

MUÑOZ, A.R. 2008, The ceramic sequence of Piedras Negras, Guatemala: types and varieties. Report submitted to the Foundation for the advancement of Mesoamerican studies. Available online at www.famsi.org.

MUÑOZ COSME, G. 1997, El Templo V de Tikal: su arquitectura. X Simposio de Investigaciones Arqueologicas en Guatemala, 1996, J.P. Laporte and H. Escobedo, eds., Museo Nacional de Arqueología y Etnología, Guatemala, pp. 300-314.

NEEDHAM, R. 1967, 'Percussion and transition', *Man*, vol. 2, no. 4, pp. 606-614.

NICHOLSON, H.B. 1960, 'The Mixteca-Puebla concept in Mesoamerican Archaeology: A reexamination', in *Pre-columbian art history: selected readings*, A. Cordy-Collins and J. Stern, eds., University of Pennsylvania Press, Philadelphia, pp. 113-119.

NOGUERA, E. 1945, 'Los incensarios prehispánicos', *Revista de la Universidad Nacional de Antropología de México*, vol. 4, Universidad Nacional Autónoma de México, México.

NORMAN, V.G. 1976, *Izapa sculpture. Part 2: Text.* Papers of the New World Archaeological Foundation, no. 30. New World Archaeological Foundation, Brigham Young University: Provo.

O'MANSKY, M. and DUNNING, N.P. 2004, 'Settelment and Late Classic political disintegration in the Petexbatun region, Guatemala', in *The Terminal Classic in the Maya Lowlands: Collapse, transition and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University of Colorado Press, Boulder, Colorado, pp. 83-101.

ORTON, C., TYERS, P., and VINCE, A. 1993, *Pottery in Archaeology*. Cambridge University Press: Cambridge.

PAGDEN, A. 1972, *Hernán Cortéz. Letters from Mexico.* Oxford University Press: London.

PALKA J. 1990, Operación DP15: excavaciones en el grupo residencial K4-1, Proyecto Arqueológico Regional Petexbatún, Guatemala, Informe Preliminar no. 2, segunda temporada 1990, pp. 146-165.

PATTERSON, S.D. 1992, *In search of a Mesoamerican floricultural tradition: ceremonial and ornamental plants among the Yucatecan Maya,* Unpublished Ph.D. dissertation, University of California, Los Angeles.

PENDERGAST, D.M. 1970 a, *A.H. Anderson's excavations at Río Frío Cave E, British Honduras (Belize)*. Art and Archaeology, Occasional paper no. 20, Royal Ontario Museum, Toronto.

PENDERGAST, D.M. 1970 b, 'Tumbaga object from the Early Classic period found at Altun Ha, British Honduras (Belize)', *Science*, vol. 168, pp. 116-118.

PENDERGAST, D.M. 1981a, 'The 1980 excavations at Lamanai, Belize, from the ninth to the seventeenth century', *Mexicon*, vol. II, pp. 96-99.

PENDERGAST, D.M. 1981b, 'Lamanai, Belize: summary of excavation results, 1974-1990', *Journal of Field Archaeology*, vol. 8, pp. 29-53.

PENDERGAST, D.M. 1982, 'Lamanai, Belize, durante el Postclasico', *Estudios de Cultura Maya* XIV: 19-58.

PENDERGAST, D.M. 1984, 'Excavations at Lamanai, Belize, 1983', *Mexicon*, vol. VI, pp. 5-10.

PENDERGAST, D.M. 1985a, 'Stability through change: Lamanai, Belize from the ninth to the seventeenth century', in *Late lowland Maya civilization: Classic to Postclassic*, J.A. Sabloff and V.E.W. Andrews, eds., University of New Mexico Press, Albuquerque, pp. 223-249.

PENDERGAST, D.M. 1985b, 'Lamanai, Belize: an updated view', in *The lowland Maya Postclassic*, A.F. Chase and P.M. Rice, eds., University of Texas Press, Austin, pp. 91-103.

PENDERGAST, D.M. 1986 a, 'Stability through change: Lamanai, Belize, from the nineth to the seventeenth century', in *Late lowland Maya civilization*, J.A. Sabloff and V.E.W. Andrews, eds., University of New Mexico Press, Albuquerque, pp. 223-249.

PENDERGAST, D.M. 1986 b, 'Under Spanish rule: the final chapters in Lamanai's final history', *Belcast Journal of Belizean Affairs*, vol. 3, pp. 1-7.

PENDERGAST, D.M. 1992, 'Noblesse oblige: the elites of Lamanai and Altun Ha, Belize', in *Mesoamerican elites: an archaeological assessment*, D.Z. Chase and A.F. Chase, eds., University of Oklahoma Press, Oklahoma, pp. 61-79.

PEREIRA FIGUEROA, K. 2004, *Los incensarios de tres cabezas en Escuintla, Guatemala,* Tesis de Licenciatura, Departamento de Arqueología, Universidad del Valle de Guatemala.

PÉREZ CHACÓN, J. 1988, *Los Choles de Tila y su mundo: tradición* oral. Secretaría de Desarrollo Rural, Sub-secretaría de Asuntos Indígenas, Dirección de Fortalicimiento y Fomento a las Culturas, San Cristóbal de las Casas, Chiapas, México.

POHL, J. 2002, 'Los dinteles pintados de Mitla', *Arqueología Mexicana*, vol. X, no. 55, pp. 64-67.

POLLOK, H.E.D. 1936, *Round structures of aboriginal Middle America*. Carnegie Institution of Washington, Publication 471, Washington D.C.

POLLOCK, H.E.D. [*et al.*] 1962, *Mayapan, Yucatan, Mexico*. Carnegie Institution of Washington, Publication 619, Washington D.C.

POLLOK, H.E.D. 1965, *Architecture of the Maya lowlands*. University of Texas Press: Austin.

PONCIANO, E. 2001, Plaza Princpal, Estructuras 6E-5 y 6E-6: excavacioones y descripción, Proyecto Petén-Noroccidente La Joyanca, Informe no. 3, tercera temporada de campo, 2001. V. Brewil Martinez, E. Ponciano, and C. Arnauld, eds., CEMCA, Guatemala, pp. 37-62.

PONCIANO, E. 2002, Plaza Principal, Estructura 6E-6: excavaciones y descripción, Proyecto Petén-Noroccidente La Joyanca, Informe no. 4, cuarta temporada de campo, 2002. V. Brewil-Maritinez, E. S. Lopez, and T. Saint-Dizier, eds., CEMCA, Guatemala, pp. 42-53.

PONCIANO, E. and INOMATA, T. 2004, Results of the 2002-2004 field seasons, Aguateca Excavation and Restoration Project, Peten, second phase, *PRAS,* Guatemala, pp. 1-16.

PONCIANO, E., PINTO, A.E., and MONROY, M.A. 1998, Excavaciones en la Estructura M7-34: Operación 21A, Informe presentado al Instituto de Antropología e Historia, Guatemala, Informe del Proyecto Arqueológico Aguateca: la temporada de 1998, pp. 14-26.

PROSKOURIAKOFF, T. 1955, 'The death of a civilization', *Scientific American*, vol. 192, no. 5. pp. 82-88.

PULESTON, D.E. 1983, *The settlement survey of Tikal* , University Museum monograph 48, Tikal Report no.13. University Museum, University of Phennsylvania, Philadelphia.

RANDS, R.L. 1973, 'The Classic Maya Collapse: Usumacinta Zone and the Northwestern Periphery', in *The Classic Maya Collapse*, T.P. Culbert, ed., University of New Mexico Press, Albuquerque, pp. 165-206.

RANDS, R.L. and RANDS, B.C. 1959, 'The incensario complex of Palenque, Chiapas', *American Antiquity*, vol. 25, pp. 225-236.

RAPPAPORT, R.A. 1999, *Ritual and religion in the making of humanity*. Cambridge: Cambridge University Press.

RATHJE, W.L. 1975, 'The last tango in Mayapan: a tentative trayectory of production-distribution systems', in *Ancient civilization and trade*, J.A. Sabloff and C.C. Lamberk-Karlovsky, eds., University of New Mexico Press, Albuquerque, pp. 409-448.

RECINOS, A., and GOETZ, D. 1953, *The annals of the Cakchiquels: Translated from the Cakchiquel Maya by Adrian Recinos and Delia Goetz. Title of the lords* *of Totonicapan translated from the Quiche text into Spanish by Dionisio Jose Chonay. English version by Delia Goetz*. University of Oklahoma Press: Norman.

REDFIELD, R. 1934, *Chan Kom, a Maya village*. Carnegie Institution of Washington, Publication 448, Washington D.C.

REDFIELD, R. and VILLA, R.A. 1939, *Notes on the ethnography of Tzeltal communities of Chiapas*. Carnegie Institution of Washington, Publication 509, Washington D.C.

REINA, R.E. and HILL, R.M. 1978, *The traditional pottery of Guatemala*. University of Texas Press: Austin.

RELACIÓN del PUEBLO de MAMA RY. In *Relaciones de Yucatán*. Colección de documentos inéditos de Ultramar. Harvard University Library of the Peabody Museum of American Archaeology and Ethnology. Segunda serie publicada por la Real Academia de la Historia.

RICE, D.S. 1986, 'The Peten Postclassic: a settlement perspective', in *Late lowland Maya civilization: Classic to Postclassic*, J.A. Sabloff and V.E.W. Andrews, eds., University of New Mexico Press, Albuquerque, pp. 301-344.

RICE, P.M. 1987, *Manaché Island, El Petén, Guatemala: Excavations, pottery and artifacts.* University of Florida Press: Gainesville.

RICE, P.M. 1999, 'Rethinking Classic lowland Maya pottery censers', *Ancient Mesoamerica*, vol. 10, no. 1, pp. 25-50.

RICE, P.M. 2004, *Maya political science: time, astronomy, and the cosmos*. University of Texas Press: Austin.

RICE, P.M., DEMAREST, A., and RICE, D. 2004, 'The Terminal Classic and the "Classic Maya collapse" in perspective', in *The Terminal Classic in the Maya lowlands: collapse, transition and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, Colorado, pp. 1-11.

RICE, P.M. and FORSYTH, D. 2004, 'Terminal Classic period lowlands ceramics', in *The Terminal Classic in the Maya lowlands: collapse, transition and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, Colorado, pp. 28-55.

RICE, P.M. and RICE, D.S. 1985, 'Topoxté, Macanché, and the central Peten Postclassic', in *The lowland Maya Postclassic*, A.F. Chase and P.M. Rice, eds., University of Texas Press, Austin, pp. 166-183.

RICE, P.M. and RICE, D.S. 2004, 'The Terminal Classic and the "Classic Maya collapse" in perspective', in *The Terminal Classic in the Maya lowlands: collapse, transition and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, pp. 1-11.

RICKETSON, O.G.Jr. 1937, *Uaxactun, Guatemala. Group E, 1926-1931. Part I. The excavations*. Carnegie Institution of Washington, Publication 477, Washington D.C.

RINGLE, W.M., GALLARETA NEGRÓN, T., and BEY III, G.J. 1998, 'The return of Quetzalcoatl: evidence for the spread of a world religion during the Epiclassic period', *Ancient Mesoamerica*, vol. 9, no. 2, pp. 183-232.

ROBERTSON D. 1970, The Tulum murals: the International Style of the Late Postclassic, 38th Internationalen Amerikanistenkongresses, vol. 2, Munich, pp. 77-88.

ROBLES, C.F. and ANDREWS, A.P. 1986, 'A review and synthesis of recent Postclassic Archaeology in Northern Yucatan', in *Late lowland Maya civilization: Classic to Postclassic*, J.A. Sabloff and Andrews E.W., eds., SAR and University of New Mexico Press, Albuquerque, pp. 53-98.

RODAS, I., MARROQUÍN M.A., ROMERO I., and URQUIZÚ, M. 1993, Excavaciones en la cueva Aktun Ak' Ab, zona del resumidero del Río Xa'an, Dolores, Atlas Arqueológico de Guatemala, Reporte 7, Instituto de Antropología e Historia, Guatemala, pp. 91-104.

ROJAS, J.L. 1997, *Información de 1554 sobre los tributos que los indios pagaban a Moctezuma*. 1. ed. Ciesas: México, D.F.

ROVNER, I. 1975, *Lithic sequences from the Maya lowlands,* Unpublished Ph.D. dissertation, Department of Anthropology, University of Wisconsin.

ROYS, R.L. 1931, *The ethno-botany of the Maya*. Department of Middle American Research, Tulane University: New Orleans, Lousiana

ROYS, R.L. 1933, 'The book of Chilam Balam of Chumayel', Carnegie Institution of Washington, Publication 438, Washington D.C.

RUIZ de ALARCÓN, H. 1988, *Tratado de las supersticiones y costumbres gentilicas que hoy viven entre los indios naturales desta Nueva España*. Secretaría de Educación Pública: México, D.F.

RUPPERT, K. 1952, *Chichen Itza. Arquitectural notes and plans*. Carnegie Institution of Washington, Publication 595, Washington D.C.

RUSSELL, B.W. 2000, *Postclassic pottery censers in the Maya lowlands: a study of form, function, and symbolism,* Unpublished Masters thesis, Department of Anthropology, State University of New York, Albany.

RUZ LHUILLIER, A. 1964, Influencias Mexicanas sobre los Mayas in *Desarrollo Cultural de los Mayas*, E.Z. Vogt and A. Ruz Lhuillier, Universidad Nacional Autónoma de México, México.

RZEDOWSKY, J. and GUEVARA, F. 1992, Flora del bajío y de regiones adyacentes. Familia Burceraceae. Fasciculo 3, CONACYT, México.

SABLOFF, J.A. 1970, 'Type descriptions of the Fine Paste Ceramics of the Bayal Boca Complex, Seibal, Peten, Guatemala', in *Monographs and papers in Maya Archaeology*, W.R.Jr. Bullard, ed., Harvard University Press, Cambridge, Massachusetts, pp. 357-404.

SABLOFF, J.A. 1971, 'The collapse of Classic Maya civilization', in *The patient Earth*, J. Harte and R. Socolow, eds., Holt, Rinehart and Winston, New York, pp. 16-27.

SABLOFF, J.A. 1973, 'Continuity and disruption during Terminal Classic times at Seibal: ceramic and other evidence', in *The Classic Maya collapse*, T.P. Culbert, ed., University of New Mexico Press, Albuquerque, pp. 107-131.

SABLOFF, J.A. 1975, ‘Ceramics’, in *Excavations at Seibal, Guatemala*, vol. 13, no. 2, Memoirs of the Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, Massachusetts.

SABLOFF, J.A. and RATHJE, W.L. 1975, ‘The rise of a Maya merchant class’, *Scientific American*, vol. 23, no. 4, pp. 72-82.

SABLOFF, J.A. and WILLEY, G.R. 1967, ‘The collapse of the Maya civilization in the Southern lowlands: a consideration of history and process’, *Southwestern Journal of Anthropology*, vol. 23, no. 4, pp. 331-356.

SÁENZ, C. 1956, *Palenque. Exploraciones en la pirámide de la Cruz Foliada y en los Templos XVIII and XXI*, Informe del Instituto Nacional de Antropología e Historia, no. 5, México.

SAHAGÚN, [Fray] B. de 1979, *Historia general de las cosas de Nueva España. Códice Florentino*, tomo 1, Editorial Porrúa, México.

SAHAGÚN, [Fray] B. de 1981, *Florentine codex: general history of the things of New Spain*, Part III Book 2 – The Ceremonies, 2nd. ed. rev. translated from Aztec into English, with notes and illustrations, by A.J.O. Anderson and Dibble, Ch.E. Monographs of the School of American Research, no. 14, pt. 3. School of American Research and the Univeristy of Utah: Santa Fe, New Mexico.

SAHAGÚN, [Fray] B. de 1988, *Historia general de las cosas de Nueva España*, Primera versión íntegra del texto castellano del manuscrito conocido como Códice Florentino, tomo 1, Lopez Austin and J. García Quintana, eds., Editorial Alianza, Madrid.

SAHAGÚN, [Fray] B. de 1992, *Ritos, sacerdotes y atavíos de los dioses*. Introducción, paleografía, versión y notas de Miguel Leon-Portilla. Fuentes indígenas de la cultura nahuatl. Textos de los informantes de Sahagún, tomo 1, Universidad Nacional Autónoma de México, México.

SALINAS GUEVARA, L. and CASTELLANOS DOUNCE, R. 2004, *La resina sagrada de copal, elemento imprescindible en las culturas mesoamericanas,* Tesis de Licenciatura en Arqueología, Escuela Nacional de Antropología e Historia, México D.F.

SATTERTHWAITE, L. 1946, ‘Incense burning at Piedras Negras’, *Bulletin*, University Museum, University of Pennsylvania, Philadelphia, vol. 11, no. 4, pp. 16-22.

SAUL, F.P. 1973, ‘Disease in the Maya area: the pre-Columbian evidence’, in *The Classic Maya collapse*, T.P. Culbert, ed., University of New Mexico Press, Albuquerque, pp. 301-324.

SCHECHNER, R. 1994, ‘Ritual and performance’, in *Companion Encyclopedia of Anthropology*, T. Ingold, ed., Routledge, London and New York, pp. 613-648.

SCHELE, L. and FREIDEL, D. 1990, *A forest of kings: the untold story of the ancient Maya*. William Morrow: New York.

SCHELE, L. and MILLER, M.E. 1986, *The blood of kings: dynasty and ritual in Maya art*. Photographs by Justin Kerr. Sotheby’s publications in association with the Kimbell Art Museum: London.

SCHMIDT, P.J. 1976, ‘1976/77 Postclassic finds in the Cayo District, Belize’, *Estudios de Cultura Maya*, vol. X, pp. 103-114.

SCHOLES, F.V. and ADAMS, E. 1938, *Don Diego Quijada, Alcalde Mayor de Yucatán, 1561-1565*. Documentos sacados de los archivos de España I-XXXIII, Biblioteca Histórica Mexicana de obras inéditas, 14, 15, México.

SCHOLES, F.V. and ROYS, R.L. 1948, *The Maya Chontal indians of Acalan-Tixchel: a contribution to the history and ethnology of the Yucatan Peninsula*. Carnegie Institution of Washington, Publication 560, Washington D.C.

SEEGER, A. 1994, ‘Music and Dance’, in *Companion Encyclopedia of Anthropology*, T. Ingold, ed., Routledge, London and New York, pp. 613-648.

SELER, E. 1901, *Die alten Ansiedelungen von Chacula im Distrikt Nenton des Departments Huehuetenango der Republik Guatemala*. Dietrich Reimer, Berlin.

SEMEGEN, S.T. 1973, ‘Natural rubber’, in *Rubber Technology*, 2nd ed., M. Morton, ed., Nostrand Reinhold, New York, pp. 152-177.

SERNA, J. de la, 1953, *Tratado de las idolatrías, supersticiones, dioses, ritos, hechicerías y otras costumbres gentilicas de las razas aborígines de México*. Notas, comentarios y un estudio de Don Francisco del Paso y Troncoso, 2nd ed. ampliada con importantes suplementos e índices. Ediciones Fuente Cultural: México, D.F.

SERRA, M.C., LAZCANO, C., and De la TORRE MENDOZA, M. 2004, “Cerámica de Xochitecatl,” Universidad Nacional Autónoma de México, México D.F.

SHARER, R.J. 1978, *The Quiriguá project: 1978 Report*, Paper no.7. University Museum: Philadelphia.

SHEPARD, A.O. 1948, *Plumbate: A mesoamerican trade ware*. Carnegie Institution of Washington, Publication 573, Washington D.C.

SHIMKIN, D.B. 1973, ‘Models for the downfall: some ecological and culture-historical considerations’, in *The Classic Maya collapse*, T.P. Culbert, ed., University of New Mexico Press, Albuquerque, pp. 269-300.

SIDRYS, R. 1983, *Archaeological excavations in northern Belize, Central America*. Institute of Archaeology, Monograph 17, University of California, Los Angeles.

SIERRA CARRILLO, D. 2000, *El Yauhtli o pericoón, planta curativa y protectora. Su importancia mágico religiosa en el presente y el pasado,* Tesis doctoral en Historia, Universidad Nacional Autónoma de México.

SIMEÓN, R. 1977, *Diccionario de la lengua nahuatl o mexicana*. Siglo Veintiuno: México.

SIMMONS, S.E. 1991, *Arrows of consequence: contact period tool technology at Tipu, Belize,* Unpublished Master’s thesis, University of Massachusetts, Boston.

SMITH, A.L. 1962, ‘Residential and associated structures at Mayapan’. In Mayapan, Yucatan, Mexico, H.E.D.

Pollock, R.L. Roys, T. Proskouriakoff and A.L. Smith, eds., Carnegie Institution of Washington, Occasional Publication 619, Washington D.C., pp. 165-320.

SMITH, A.L. 1972, *Excavations at Altar de Sacrificios, architecture, settlement, burials, and caches*. Papers of the Peabody Museum of Archaeology and Ethnology, vol. 62, no. 2, 154, Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, Massachusetts.

SMITH, A.L. 1982, 'Major architecture and caches', in *Excavations at Seibal, Department of Peten, Guatemala*, G. R. Willey, ed., Memoirs of the Peabody Museum of Archaeology and Ethnology, vol. 15, no. 1, Harvard University Press, Cambridge, Massachusetts.

SMITH, M.E. 2002, 'Domestic ritual at Aztec provincial sites in Morelos', in *Domestic ritual in ancient Mesoamerica*, P. Plunket, ed., Cotson Institute of Archaeology, Los Angeles, California, pp. 93-114.

SMITH, M.E. and HEATH-SMITH, C.M. 1980, 'Waves of influence in Postclassic Mesoamerica? A critique of the Mixteca-Puebla concept', *Anthropology*, vol. 4, no. 2, pp. 15-50.

SMITH, R.E. 1955, *Ceramic sequences at Uaxactun, Guatemala.* Carnegie Institution of Washington, Publication 20, Middle American Research Institute, New Orleans, Tulane University.

SMITH, R.E. 1971, *The pottery of Mayapan: including studies of ceramic material from Uxmal, Kabah, and Chichen Itza*. Papers of the Peabody Museum of Archaeology and Ethnology, vol. 66, Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge.

SMITH, R.E. and KIDDER, A. V. 1943, *Explorations in the Motagua Valley, Guatemala*. Carnegie Institution of Washington, Publication 546, Washington, D.C.

SOLIS, F. 2004, 'Mexica', in *National Museum of Anthropology. Mexico. Guidebook*, CONACULTA-INAH/LUNWERG. Samsung SyncMaster P2470LHD

SPINDEN, H. 1928, *The ancient civilizations of Mexico and Central America*. American Museum of Natural History, Handbook Series, 3. The Museum, New York.

STACEY, R.J., CARTWRIGHT, C.R., and McEWAN, C. 2006, 'Chemical characterization of ancient mesoamerican copal resins: Preliminary results', *Archaeometry*, vol. 48, no. 2, pp. 323-340.

STANDLEY, P.C. and STEYERMARK, J.A. 1946, *Flora of Guatemala*. Fieldana. Botany 24, part 4, Chicago Natural History Museum, Chicago.

STERPONE, O.J. 2000/2001, 'La quimera de Tula', *Boletín de Antropología Americana*, vol. 37, pp. 141-204.

STONE, A. 1989, 'Disconnection, foreign insignia, and political expansion: Teotihuacan and the warrior stelae of Piedras Negras', in *Mesoamerica after the decline of Teotihuacan A.D. 700-900*, R.A. Diehland and J.C. Berlo, eds., Dumbarton Oaks Research Library and Collection, Washington, D.C., pp. 153-172.

STONE, A. 2002, 'Spirals, ropes and feathers', *Ancient Mesoamerica*, vol. 13, no. 1, pp. 21-39.

STROSS, B. 1997, 'Mesoamerican copal resins', *U-Mut Maya*, vol. VI, pp. 177-186.

STRUCKER, J.D. 1963, 'Some ritual aspects of the use of copal among ancient and present-day Maya speakers', *Harvard University Freshman Seminar Program*, vol. 1, pp. 1-16.

STUART, D. 1998, '"The fire enters his house": architecture and ritual in Classic Maya texts', in *Function and meaning in Classic Maya arquitecture*, S. Houston, ed., Dumbarton Oaks Research Library and Collection, Washington D.C., pp. 373-425.

TARKANIAN, M.J. and HOSLER D. 2000, 'La elaboración de hule en Mesoamérica', *Arqueología Mexicana*, vol. VIII, no. 44, pp. 54-57.

TASCHEK, J. and BALL J.W. 1999, 'Las Ruinas de Arenal: preliminary report on a subregional major center in the western Belize Valley (1991-1992 excavations)', *Ancient Mesoamerica*, vol. 10, pp. 215-235.

TAUBE, K. 1998, 'The jade hearth: centrality, rulership and the Classic Maya temple', in *Function and meaning in Classic Maya architecture*, S.D. Houston, ed., Dumbarton Oaks Research Library and Collection, Washington, D.C., pp. 427-478.

TAUBE, K. 2000, 'The turquoise hearth: fire, self sacrifice, and the central Mexican cult of war', in *Mesoamerica's Classic heritage: from Teotihuacan to the Aztecs*, D. Carrasco, L. Jones, and S. Sessions, eds., University of Colorado Press, Boulder, pp. 269-340.

TEDLOCK, D. 1985, *Popol Vuh: the Mayan book of the dawn of life.* Translated by Dennis Tedlock, with commentary based on the ancient knowledge of the modern Quiche Maya Simon and Schuster Touchstone: New York.

TEDLOCK, D. 1996, *Popol Vuh: The Mayan Book of the Dawn of Life*. Simon and Schuster Touchstone: New York.

THOMPSON, D.E. and THOMPSON, J.E. 1955, *A noble's residence and its dependencies at Mayapan*. Carnegie Institution of Washington. Current Report, 25, Washington, D.C.

THOMPSON, J.E.S. 1931, *Archaeological investigations in the southern Cayo District, British Honduras*. Field Museum of Natural History, Anthropological Series, vol. 17, no. 3, Chicago.

THOMPSON, J.E.S. 1939, *Excavations at San José, British Honduras*. Carnegie Institution of Washington, Publication 506, Washington D.C.

THOMPSON, J.E.S. 1957, *Deities portrayed on censers at Mayapan*. Carnegie Institution of Washington, Current Report no. 40, Washington, D.C.

THOMPSON, J.E.S. 1970, *Maya history and religion*. University of Oklahoma Press: Norman.

THOMPSON, J.E.S. 1972, *A commentary on the Dresden Codex; a Maya hieroglyphic book.* Memoirs of the American Philosophical Society, vol. 93, American Philosophical Society, Philadelphia.

THOMPSON, R.H. 1958, *Modern Yucatecan Maya pottery making*. Society for American Archaeology, Memoirs of the Society for American Archaeology, 15, Salt Lake City.

TOBÍAS, M.D. 2001, *Mexican influences at Lamanai and Marco Gonzalez, Belize, during the Late Classic-Early Postclassic periods,* Unpublished Masters Thesis, University College London, University of London.

TORQUEMADA, [Fray] J. de 1976, *De los veinte y un libros rituales y monarquía indiana, con el origen y guerras de los indios occidentales, de sus poblaciones, descubrimiento, conquista, conversión, y otras cosas maravillosas de la mesma tierra*. Univerisdad Nacional Autónoma de México: México.

TOURTELLOT, G. 1988, 'Peripheral survey and excavation settlement and community patterns', in *Excavations at Seibal, Department of Peten, Guatemala*, G.R. Willey, ed., Peabody Museum of Archaeology and Ethnology, Memoirs of the Peabody Museum of Archaeology and Ethnology, vol. 16, Harvard University, Cambridge, Massachusetts.

TOURTELLOT, G. 1990, 'Burials: a cultural analysis', in *Excavations at Seibal, Department of Peten, Guatemala*, G.R. Willey, ed., Peabody Museum of Archaeology and Ethnology, Memoirs of the Peabody Museum of Archaeology and Ethnology, vol. 17, Harvard University, Cambridge, Massachusetts.

TOURTELLOT, G. and GONZÁLEZ, J.J. 2004, 'The last hurrah: continuity, and transformation at Seibal', in *The Terminal Classic in the Maya lowlands: collapse, transition and transformation*, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, Colorado, pp. 60-82.

TOURTELLOT, G. and SABLOFF, J. 1994, 'Community structure at Sayil: a case study of Puuc architecture', in *In press*, pp. 71-92.

TOURTELLOT, G., SABLOFF, J.A., and CARMEAN, K. 1992, 'Will the real elites please stand up? An archaeological assessment of Maya elite behavior in the Terminal Classic period', in *Mesoamerican elites: an archaeological assessment*, D.Z. Chase and A.F. Chase, eds., University of Oklahoma Press, Norman, pp. 80-98.

TOURTELLOT, G., SABLOFF, J., and SMYTH, M. 1990, 'Room counts and population estimation for Terminal Classic Sayil in the Puuc region, Yucatan, Mexico', in *Precolumbian population history in the Maya lowlands*, T.P. Culbert and D.S. Rice, eds., University of New Mexico Press, Albuquerque, pp. 245-261.

TOZZER, A. 1907, *A comparative study of the Mayas and the Lacandons*. Archaeological Institute of America, MacMillan, New York.

TRIPPLETT, K.J. 1999, *The ethnobotany of plant resins in the Maya cultural region of southern Mexico and Central America,* Ph.D. thesis, University of Texas, Austin.

TURNER, V. 1957, *Schism and continuity in an African society: a study of Ndembu village life*. Manchester University Press: Manchester.

TURNER, V. 1967, *The forest of symbols: aspects of Ndembu ritual*. Cornell University, Ithaca; London.

TURNER, V. 1968, *The drums of affliction: a study of religious processes among the Nedembu of Zambania*. Oxford: Clarendon Press.

TURNER, V. 1977, 'Symbols in African ritual', in *Symbolic Anthropology*, J.L. Dolgin, Kemnitzer, D.S., and D.M. Schneider, eds., Columbia University Press, New York, pp. 183-194.

TURNER, V. 1982, *From ritual to theatre: the human seriousness of play*. New York: Performing Arts Journal Publications.

TURNER, V. and BRUNER, E.M. 1986, *Anthropology of experience*. Urbana: University of Illinois Press.

VAILLANT, G.C. 1940, 'Patterns in Middle American Archaeology', in *The Maya and their neighbors*, C.L. Hay, ed., D. Appleton-Century Company, New York, pp. 295-305.

VALDÉS, J.A. and FAHSEN, F. 2004, 'Disaster in sight: the Terminal Classic at Tikal and Uaxactun', in The Terminal Classic in the Maya lowlands: collapse, transition and transformation, A.A. Demarest, P.M. Rice, and D.S. Rice, eds., University Press of Colorado, Boulder, Colorado, pp. 140-161.

VALDÉS, J. A., URQUIZÚ, M., DIAZ SAMAYOA, C., and MARTÍNEZ, P. 2000, *Informe final del Proyecto de Restauración Aguateca, Enero-Mayo 2000*. Report submitted to the Instituto de Antropología e Historia de Guatemala as part of the Programa de Desarrollo Sostenible de Petén, BID-IDAEH, Guatemala, pp. 107-129.

VELÁZQUEZ MORLET, A., LOWE, L.S., and LÓPEZ de la ROSA, E. 1990, 'Algunas reflexiones sobre el Postclásico Temprano en las tierras bajas Mayas del norte', in *Mesoamérica y norte de México. Siglo IX al XI*, F. Sodi Miranda ed., Seminario de Arqueología 'Wigberto Jimenez Moreno', vol. 1, Instituto Nacional de Antropología, México D.F., pp. 15-32.

WALKER, D.S. 1998, 'Smashed pots and shattered dreams: the material evidence for an Early Classic site termination at Cerros, Belize', in *The sowing and the dawning: termination, dedication and transformation in the archaeological and ethnographic record of Mesoamerica*, S. Boteler Mock, ed., University of New Mexico Press, Albuquerque, pp. 81-99.

WEBSTER, D.L. 1977, 'Warfare and the evolution of Maya civilization', in *The origins of Maya civilization*, R.E.W. Adams, ed., University of New Mexico Press, Albuquerque, pp. 335-371.

WEBSTER, D.L. 1978, 'Three walled cities of the northern Maya lowlands', *Journal of Field Archaeology*, vol. 5, pp. 375-390.

WHITEHORN, M. and MARKLYN, B. 1998, *Inside relational databases with examples in Access*. London: Springer-Verlag.

WILLEY, G.R. 1973, *The Altar de Sacrificios excavations: general summary and conclusions*. Papers of the Peabody Museum of Archaeology and Ethnology, vol. 64, Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, Massachusetts.

WILLEY, G.R. 1978, 'Artifacts', in *Excavations at Seibal, Department of Peten, Guatemala*, G.R. Willey, ed., Memoirs of the Peabody Museum of Archaeology and Ethnology, vol. 14, Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, Massachusetts.

WILLEY, G.R. 1990, ‘General summary and conclusions’, in *Excavations at Seibal, Department of Peten, Guatemala*, Memoirs of the Peabody Museum of Archaeology and Ethnology, vol. 17, Peabody Museum of Archaeology and Ethnology, Harvard University Press, Cambridge, Massachusetts.

WILLEY, G.R., CULBERT, T.P., and ADAMS, R.E.W. 1967, ‘Maya lowland ceramics: A report from the 1965 Guatemala City Conference’, *American Antiquity*, vol. 32, pp. 289-315.

WILSON, R. 1995, *The Maya resurgence in Guatemala: Q’eqchi experieces*. Oklahoma: University of Oklahoma Press.

WISDOM, C. 1940, *The Chorti indians of Guatemala*. Chicago: University of Chicago Press.

Yerbas y hechicerías del Yucatán. Manuscript owned by the Department of Middle American Research. Tulane Univeristy, New Orleans.

XIMÉNEZ, F. 1967, *Historia natural del reino de Guatemala*. Sociedad de Geografía e Historia de Guatemala, Publicación especial no. 14. Editorial José de Pineda Ibarra, Guatemala.